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THE

GARDEN

AN

ILLUSTRATED WEEKLY JOURNAL

OF

GARDENING IN ALL ITS BRANCHES.

> THIS IS AN ART
> WHICH DOES MEND NATURE: CHANGE IT RATHER: BUT
> THE ART ITSELF IS NATURE.—Shakespeare.

FOUNDED AND CONDUCTED

BY

WILLIAM ROBINSON,

AUTHOR OF "ALPINE FLOWERS FOR ENGLISH GARDENS," "THE WILD GARDEN," ETC.

VOL. III.

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TO

THOMAS RIVERS,

OF SAWBRIDGEWORTH, HERTS.,

AUTHOR OF

"THE ROSE AMATEUR'S GUIDE," "THE ORCHARD HOUSE," "THE MINIATURE FRUIT GARDEN,"

ETC., ETC.,

THIS VOLUME OF "THE GARDEN" IS RESPECTFULLY DEDICATED, IN RECOGNITION
OF HIS MANY AND GREAT SERVICES RENDERED TO HORTICULTURE.

Harvard

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THOMAS RIVERS.

In carrying out for The Garden a Portrait Gallery of those Horticulturists who have given special proofs of their love and skill, whether in their work at home, in their exquisite specimens of superior culture shown at our exhibitions, or in the instructive results of their experience, communicated through the public press—who have most distinguished themselves in the great object of our brotherhood, namely in their endeavours to amplify all things pleasant to the eye and good for food, to reclaim and restore, to make the desert smile, we shall not find much delay or difficulty in resolving the question of precedence. We want to know who has given, so far as horticulture is concerned, the greatest happiness to the greatest number, and there is no need to appoint committees, or to send abroad commissioners, before we can attain our wish. We have not to seek our hero in "scientific" schools, we shall not find him poring over elongated Latin, over the herbarium, or the "hortus siccus;" our wreath of Laurel, with which we propose to crown him, is not mixed with Botany Bays; we shall not discover him even amid those distinguished men who have made one branch of our gentle art their peculiar study and success; we cannot give the Golden Apple to Venus, because we want something more than beauty; but we must bestow the Palm upon one who has achieved greatness, both in flowers and in fruits, who some forty years ago, found Love asleep among the Roses, roused him, trained him, made a pleasant, popular, man of him—who wrote the first descriptive catalogue of Roses ever published, and the first reliable guide for amateur Rosarians, an excellent manual, now in its tenth edition—who introduced the use of the Italian "Manetti" Rose as a stock on which to bud and graft the more lovely varieties from France, and an admirable nursing-mother it has proved, in many cases, where rough old Briareus has failed to rear a family—who subsequently invented Orchard Houses, and who has originated, and still originates, new varieties of our most luscious fruits. Yes; to Thomas Rivers we must give in our gallery the third welcome, the most conspicuous position, the most favourable light.

That light falls on just such a head as one would expect to see above the shoulders of a man who had lived long and laboured heartily among the most beautiful works of the Creator; it falls upon a handsome, thoughtful, kindly countenance. When he who writes was only an entered apprentice in one of the most distinguished lodges ("Rose Croix") of Free and Accepted Gardeners, he would sometimes amuse himself with imaginary speculations as to the personal appearance of his worshipful master at Sawbridgeworth. There must be, he thought, a freshness, a frankness, a ruddiness, a benevolence, a gentle generous goodness, beaming in the face of one who has such a sympathy with sweetness and beauty. And when we met, pupil and master, this picturesque vision, instead of misconducting itself, as bright dreams will, was realised in broadcloth, and flesh and blood. As Stanley walked up to the great explorer, and said "Dr. Livingstone, I believe;" so could the student in Roses have addressed the professor, without an introduction, "Mr. Rivers, I've known you for years."

With the place of honour, let us give him also the assurance of our affectionate respect. And, surely, there must be brightness for such a man, in the solemn nightfall of old age, to think how much pure innocent happiness he has diffused amid his fellows, by inducing them to love, and helping them to improve, their flowers and fruit-trees; surely it will sustain and cheer him in feeble or lonely hours to remember how many grateful friends he has, in whose enthusiastic spirit his own, rekindled, lives and glows again. For generations, when the bloom shall be upon the Peach, and the blush shall be upon the Rose, his memory shall live. The poet says:—

> "You may break, you may ruin the vase, if you will,
> But the scent of the Roses will cling round it still."

And we gardeners will say of our patriarch, though our "master be taken from our head to-day," he shall survive in his books and in his works among us; and a likeness, truthful as that which we have before us in The Garden to-day, shall be hung up in faithful hearts.

Mr. Rivers's history is that of most men who have achieved success in their undertakings by constant and unremitting attention to their work. He was not born with a silver spoon in his mouth, and to this fact much of his success is probably due. He inherited a small property, and a business in which his enthusiastic love of plants enabled him to foresee a great development. When he began to turn his attention to his profession, Rose cultivation was in a very different position to what it is at present. Standard Roses being principally imported from France, and in small quantities, he determined to visit France and examine the French mode of Rose culture for himself. The success of his earliest literary effort, " The Rose Amateur's Guide," established him at once as an English cultivator fully equal to the French in love of the flower and in skill in its cultivation. The book, in manuscript, was submitted by him to one of his earliest Rose friends, Professor Jones, of Haileybury College, then one of the most profound scholars of the day. Dr. Jones's approval was at once accorded, and " The Rose Amateur's Guide " was received by the public as it was received by Dr. Jones. While pursuing his Rose researches, the pyramidal mode of fruit-tree training, as universally practised in French and Belgian gardens, attracted his attention—always keen on matters likely to prove of general utility—and the " Miniature Fruit Garden," modest and small in its infancy, inaugurated a new era of fruit cultivation in English gardens. Although for years practised in France and Belgium, pyramidal fruit tree training does not appear to have been much employed in England until Mr. Rivers drew public attention to the extraordinary facilities given by this mode of culture. The frequent failure of the fruit crops led him to devise some simple and effective means of protecting fruit, and he hit upon the system of growing trees in pots. By very small degrees, and with constant experiments, extending over some years before finally giving the culture a name, he perfected the " Orchard House." Like the " Rose Amateur's Guide," and the " Miniature Fruit Garden," the " Orchard House" began at the beginning. During the time occupied in developing his ideas on these heads he was constantly occupied in studying and forming large collections of fruits, and nearly every continental new fruit found its way to Sawbridgeworth, and most of them eventually to the fire heap. Mr. Rivers was at one time a most ardent cultivator of what are called ornamental trees and herbaceous plants; his collections of both were at one time very large, and he was quite as enthusiastic a lover of these as of Roses. Loudon gave him the benefit of his vast knowledge, and took great interest in his various collections; in one tribe, that of the Oaks, his collection was unusually extensive. He has made good use of the "Orchard House" to endeavour to improve the varieties of Peaches. The few sorts selected as worthy of naming have been taken from more than 1,500 seedlings, and it may give some idea of the work done when it stated that these were all grown under glass. Mr. Rivers has been a large employer of labour; a small agricultural village has by the continued employment of the capital required in carrying out his ideas—all of which necessitate labour—been benefited by the large sums annually spent.

Mr. Rivers, through failing health, has retired from active life, yet his mind is still active. Seventy-six years is a long measure of life for a man, but few men can look back with greater satisfaction than he can on a life worthily spent and deserving in every way of the commendation that, as far as lay in his power, he has been a good citizen of a great country.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

CALIFORNIAN LILIES.

We have just received, along with a parcel of Californian bulbs, the following observations on their culture and habits, from Dr. Kellogg, the well-known botanist of San Francisco, who has studied Californian plants thoroughly, not only in his cabinet, as many botanists do, but on the mountains and plains for months at a time. The subject is important to us at the present moment, when we are receiving fine Lilies in such quantities from California, not to speak of the many other beautiful bulbs that come from that favoured region.

Let us, in the first place, says Dr. Kellogg, "consider the Lilies how they grow." In a climate like that of California, distinguished by a wet and long dry season, we find these bulbs located say about 6 to 10 inches deep, and the fibres or roots shooting downwards 10 inches to a foot below that point, in search of food and moisture. Is it not evident, then, that such bulbs require a flower-pot at least 18 inches deep? Hence, ordinary pots must be utterly useless, or worse—cramping or inadequate to meet even primary natural conditions. Let any one take an improvised 5-gallon tin can, or the like, which is good enough, not to say the best; paint it rudely inside and out to preserve it; punch say at least three large holes in the bottom of it; plant, as in nature, in any good compost, and set your can, keg, or crock, as the case may be, in a shallow pan of water. You will soon have the pleasure of seeing a stout stem, of the thickness of your thumb, rising up and flowering gorgeously. If a plant spends its vital force in vain, searching for food or moisture, little or nothing else can be accomplished. Abronia arenaria, as the specific name indicates, grows in sand. If found on deep sand-drifts of the bay shore of San Francisco, or inland, it shoots down a stout fusiform root of indefinite length, but often poor and puny is the top, that creeps not far from the crown, with perhaps few flowers and little fruit. But mulch a moist, brackish, cracky soil, with only 6 or 8 inches of sand, and it will go down to, or a little into it, spread abroad its forked subdivisions and fibres, almost or quite horizontally; the crown-sprouts now run riotously, mantling the sand with vines, full of pink flowers in fruitful umbels unnumbered. Cultivators are apt to complain that many of their bulbs ere they bloom lose one essential beauty of plants, viz., their radicle leaves, which, they say, "dry up, and leave the stems looking naked and bare." Bulbs are frequently found upon exposed hills and slopes, rocks, &c., descending down dry and very hot valleys into debris and alluvial bottoms, where sand or loam with underground moisture abounds. The very same plants are seen to rejoice best where they find some shade and shelter, otherwise they bespeak a struggle for existence, *i.e.*, their leaves prematurely or naturally dry up early to save exhaustion. In half shade, along high banks and slopes, contiguous to creeks, with adequate subsoil moisture, we see Cyclobothra alba, with long and beautiful glaucous leaves, say an inch and a half wide, 18 inches to 2 feet in length, accompanying the flowers, ten to twenty in number; the golden C. pulchella and most others tolerate more sun and drought, with their companions the manzanita (Arctostaphylos glauca) Oaks, &c., near whose shades it is wont to linger; but its best forms love rich, rocky, half shady drains, leaf and flower being companions to the close. Witness Seubertia laxa, 2 to 4 feet high, and the Dichelostemas and Brodiæas, with from ten to fifty flowers, and green leaves in similar grace and completeness and beauty. The list might be extended; but what we desire to say and impress on our readers is, that the same plants exposed are barely one-quarter as large as these, and have no green leaves at all, or at best, a poor apology for them, and so of numberless others.

What lesson do such facts teach? Surely that the cultivator should imitate Nature in her best aspects, and it is by no means difficult to exceed even her highest standard. Bulbous plants form no exceptions. It would, indeed, be folly to fold one's hands at the very first failure; and with what delight do we behold one joyously filling up the full measure of its glory! In the loose soils in which we usually place our bulbs are they as well situated as in their native matrix? The soil then must needs be packed firmly and uniformly. It is the life-struggles with difficulties that bring out the best qualities of the man—the fruits and flowers, roots and bulbs, born of the great mother. Resistance above reacts below, gives spread, depth and vigour in the direction of least resistance. The root—the strong foundation—is of first consideration in all structural building, and should be well laid, cherished, and preserved. We do not say it should be founded upon some suitable rock, but we sometimes think so; radiated heat and graduated temperature, sweetness of drainage, and it would seem reasonable that in due time some resistance from below, also, are all requisites of high culture. May not the cultivator in his undue solicitude, be also to blame, and by some shortcoming fail, or from excess undo by overdoing? Suppose he flood too continuously between loose scales, adding excessive heat withal, ought not he to expect just the result urged? Now, we seldom see in nature bulbs sheltered by shrubs, rocks, logs, bark, leaves, &c., or in very compact soils rotten at the tips of the scales, and hence a lure to maggots and grubs; nor often in such sandy and gravelly soils as readily absorb, drain, and disperse any excess of top moisture. We appeal to the observations of careful collectors. Let us then copy the best conditions, and we feel assured the result will confirm our rather hasty hints.

In conclusion, we dare not presume that even a tithe of what we ought to say has been noted; in short, we have confined ourselves only to what may be considered peculiar to climatic conditions. Erudite and complex recipes relative to proper mixtures of soils, and common management may well be left to the knowledge and judgment of those who believe in them. With such a wealth of sunlight and heat above as falls to the lot of California, and no lack of the necessary medium moisture below, I see no reason why we may not allow Nature, under human hands, to grow her fragrant white Lady Washington Lily 6 or 7 feet high, with ten to thirty or more flowers, just as we see it wild. L. Bloomerianum, too, is a perfect giant among Lilies, when at its best making a right super-royal display. Even our little orange L. parvum, I found at the Sierra summit over 5 feet high, and bearing fifty flowers—carefully counted, but the plant was sheltered and shaded by an old emigrant water-tank stilted up, now dry and long ago abandoned, but its roots found a fair supply of water from beneath.

NOTES OF THE WEEK.

—— The double white Pink Flower of Eden now coming into flower in warm greenhouses is a remarkably valuable plant. It opens at first somewhat greenish, but soon unfolds into a large and beautiful double flower. Mr. Andrew Henderson considers it more valuable for cutting than any of the Carnations, and it flowers profusely.

—— We are glad to learn that Messrs. Stansfield, of Todmorden, have at last succeeded in so cultivating that marvellously attractive Moss, Schistostegia pennata, that they are now enabled to supply it in miniature grottoes made of cork bark, so that it may be grown in any greenhouse, or even in the drawing-room. If the plant succeed thus, we shall have to thank Messrs. Stansfield for one of the most charming features ever added to the indoor garden or the garden in the house. Hitherto in cultivation we have only seen the plant at Messrs. Stansfield's and at Messrs. Backhouse's; the object has long been to so increase and transport the plant that it may be established in other gardens.

—— We understand that the nursery and seed business of Messrs. Lawson & Son, both in Edinburgh and in London, is henceforth to be carried on as a joint-stock company, under the name of "The Lawson Seed and Nursery Company (Limited)." This old and universally-known business has now been carried on for over a century, the originator of it, Mr. Peter Lawson, having died in 1820 at a hale old age; since then Mr. Charles Lawson, of Borthwick Hall, has carried on the business as the respected head of the firm. We believe that nearly all the available shares were taken up within a few days of the intimation of the proposed change being sent out to the firm's customers, and that the company is likely to be a strong one, both in regard to supporters in trade and capital. A feature worth noticing is that a few of the most valued *employés* of the old firm, who will hold shares to a considerable amount in the new one, will be associated with the general manager in the carrying on of the company's business, thereby giving a certain guarantee that nothing will be wanting in the management to maintain the prestige of the name, as well as the good opinion of customers and the interests of the shareholders. Mr. Syme is to be general manager, and Mr. Mitchell (late gardener at Hamilton Palace) is to have the charge of the Nursery department.

—— We learn that a sale of Easter Beurré Pears sent from California has recently taken place in Glasgow.

—— The new and remarkable Iris iberica seems to be hardy about London, at least there is now a bed of it in the open air in the Wellington Nurseries in perfect health.

—— The first flower of the new year that we notice opening about London is the modest-looking Helleborus purpurascens, not a showy species by any means, but worthy of a place where full collections of hardy plants are grown.

—— We are glad to include Buckingham among the towns which are awaking to the importance of tree-embellishment. Recently a number of trees have been planted there at the expense of Mr. Egerton Hubbard.

—— At the suggestion of Mr. Carruthers, the time of competition for Lord Cathcart's prize for the best essay on the cause of, and mode of preventing, the Potato disease, has been extended to November 1st, to give candidates an opportunity for practical research on the subject.

—— Mr. Lynch White, so well known to gardeners as a horticultural engineer, has, as will be seen by an advertisement in another page, retired from business, which henceforth is to be carried on by Mr. Lynch White, jun., Mr. Baker, and Mr. Dunbar, under the name of the Thames Bank Iron Company.

—— Peaches were very freely discussed at the December meeting of the Potomac fruit growers, and great importance was placed on earliness. John Saul read extracts from English papers showing that the early Beatrice is taking a decided lead. A gentleman from North Carolina said he had a quantity of this variety fully ripe on the 15th of June of the present year (this date being two weeks ahead of Hale's early).

—— *Le Cultivateur*, a French journal, says it has been discovered that on a tree trained as an espalier, the Pears which rested on a branch grew more rapidly and much larger than those wholly self-supporting. The explanation, which was confirmed by direct experiments, is that when the stems were relieved from the compression caused by the weight of the Pears, the sap found uninterrupted flow, and was furnished in correspondingly greater supply.

—— Improvements continue here and there to be made in Hyde Park. On Wednesday, that portion of the ride in Rotten Row, extending from Hyde Park corner to Albert Gate, which has for the last two months been closed for repairs, was opened to equestrians. The foundation of the track has been examined, repaired, and the entire length covered with bright red sand and gravel. The length from Albert Gate to Kensington Gardens is now also, by order of the Commissioners of Works and Public Buildings, being subjected to a similar process.

—— The following American ways of preserving Spinach against very severe frost may not be without interest to our readers:—The first and least expensive practice is to cover the bed at once with a coating of an inch in thickness of salt, hay, or straw. This will protect the leaves from frost, and by removing the mulch the Spinach will be found in good condition. The second method is, to cut off the Spinach before the ground becomes frozen, leaving, if possible, a little earth attached to the roots. This cut Spinach is then placed in a cold frame in a layer eight or ten thick, with some leaves from the woods spread on top. The sashes are kept on the frame, and the Spinach will keep green until wanted.

—— The Royal Horticultural Society has, as we have already announced, decided to hold its provincial show for 1873 at Bath, and a very charming site has been selected. An influential meeting of local residents was recently held at the Guildhall of that city, which had been convened by the Mayor, who also took the chair, and briefly reviewed the history of the recent provincial meetings of the society. Mr. S. Butler, of Combe Hay, then read a report, which, *inter alia*, stated that a guarantee fund of £965 (a sum considerably in excess of the amount required by the Royal Horticultural Society) had been raised; that satisfactory arrangements had been made as to the use of the site selected for the exhibition; that £349 15s. had been raised towards the special prize fund—further contributions to which were urgently solicited; and that an influential local committee had been selected, with the Lord-Lieutenant of Somerset as president. The committee consists of 106 members; and Mr. J. Ostler, of 14, Bladud Buildings, Bath, was appointed secretary.

—— The pretty little Cyclamen Peakeanum is now, and has been for some time in flower in a warm greenhouse, of which it is one of the neatest ornaments. It differs from other kinds in being deliciously fragrant, in being evergreen, and in flowering continuously.

—— We noticed a nice batch of double Cyclamens coming into bloom in the Wellington Nurseries the other day, and doubtless we shall soon have quite a race of them. Double or semi-double Cyclamens are, however, anything but improvements on the single forms.

—— We understand that the large supplies of Ipecacuanha plants which have been so successfully sent to India of late were propagated and safely transmitted there by Messrs. Peter Lawson, of Edinburgh. It grows in their nurseries at Edinburgh quite freely, and may be seen there now by the hundred ready for shipment.

—— What is to become of the kitchen gardens of Versailles? Gardeners are actively at work in them, making hot-beds, plantations, and sowing, &c., of course with the intention of reaping produce of different kinds. For what reason, and above all, for whom?

—— Some varieties of Peas, though excellent in England, do not necessarily do well in America. "But last season," writes Mr. Meehan, editor of "The Gardener's Monthly," "we had an opportunity of examining a few of the new varieties raised by Mr. Laxton growing in this country, and we are now able to say that they proved excellent in every respect."

—— The next election of the Gardeners' Benevolent Institution will take place at the annual meeting, Jan. 21. There are nine candidates, in addition to Mary Young, whom the committee will recommend to be placed on the pension list without the trouble of an election.

—— We have just received from Mr. Scaling, the celebrated Willow grower of Basford, Notts, and author of "The Salix," some twigs of the interesting Salix violacea, gathered on the first day of the year, and furnished with numerous silvery and silky buds, which contrast prettily with the deep violet-brown coloured slender branches on which they grow.

—— The Imperial Cauliflower, according to the French *Revue Horticole*, is a new variety of much merit. Its excellence, however, consists in its earliness, the heads having been fit for use one season eighteen days, and the succeeding one thirty-two days before the Lenormand, cultivated under the same conditions. It is a variety of French origin.

—— Some valuable plants and seeds received by Messrs. Backhouse, from their collectors in North West America and California, are, we understand, to be sold on the 9th inst., at Stevens'. Among them are the new Dogstooth Violet (Erythronium giganteum); a Californian Lily, said to grow from 6 to 10 feet high, and to bear numerous large, fragrant flowers; Lilium Washingtonianum, Cyclobothra pulchella, various species of Calochortus, the "Vegetable Fire Cracker or Scarlet Wand" (Brodiæa coccinea), and other bulbs; also seeds of a new hardy Silver Fir, from the Rocky Mountains, thought by Dr. Englemann to be his "Abies (Picea) concolor," and of other choice Coniferæ.

—— The sugar planters of Louisiana have been in very ill luck ever since the war. Despite brave struggles to reinstate this great industry in its former position, unpropitious seasons have kept down the yield. It is very doubtful whether such a series of bad crop years as those since 1864 has ever been experienced, and now we hear that a recent killing freeze will cause a loss estimated by some authorities at 50,000 hogsheads. Many planters, says the *New Orleans Picayune*, are wholly disheartened already, and if the worst reports now coming to hand prove correct, it is not improbable that many may abandon the culture of this staple and turn their attention to some more certain product.

—— Few can recollect such a "green yule" as we have had this year. In the garden at Bitton Vicarage, Gloucestershire, Mr. Ellacombe noted the following plants in flower on Christmas-day; many of them quite abnormal in their time of flowering, having mistaken Christmas for May:—Rhododendron atrovirens, Tussilago fragrans, Sisyrinchium californicum, Daphne Fioniana, red Primrose, Garrya elliptica, Ivy, Groundsel, Strawberry, Chrysanthemum, Czar Violet, Iberis semperflorens, Teucrium fruticans, Clematis cirrhosa, Arabis rosea, Rose Aimée Vibert, R. Souvenir de Malmaison, R. Gloire de Dijon, R. Jules Margottin, Arbutus Croomii, Helleborus niger, H. n. maximus, H. olympicus, H. orientalis, H. atrorubens, Cyclamen coum, Schizostylis coccinea, Maurandia Barclayana, Cheiranthus pulchellus, Jasminum nudiflorum, and Potentilla alba.

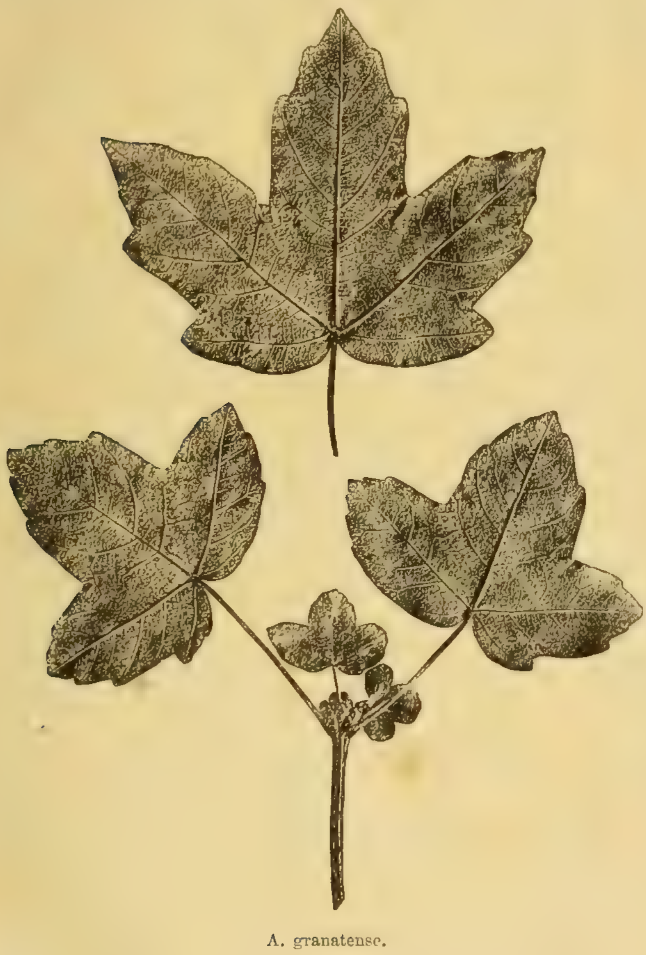
THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE SPANISH MAPLE (ACER GRANATENSE).

This species forms a dense, round-headed deciduous tree, from 20 to 30 feet high, with spreading branches thickly furnished with slender, glossy chestnut-brown twigs, in alternate opposite pairs, and which, when leafless, are covered with small, pointed, downy buds. It is a native of Spain, in the valleys of the Sierra Nevada Mountains in Granada, at an elevation of from 5,000 to 6,000 feet, and was first introduced in 1838. The leaves are three and five lobed, leathery in texture, deep glossy green above, pale beneath, slightly heart-shaped at the base, on long, slender footstalks, and, with the exception of a little tomentum at the base of the palmate veins, on the under side, quite smooth on both surfaces. The lobes are acute pointed, with the three outer ones large, equal in size, and furnished with a few blunt serratures on the edges. The flowers are in nodding, many-flowered corymbs, greenish yellow, and produced in May. The fruit or keys are small and quite smooth, with thick carpels and parallel wings, somewhat distant apart. The Spanish Maple frequently produces fresh shoots after Midsummer, at the ends of the principal branches, furnished with small leaves, seldom exceeding an inch in length or breadth, and on very short footstalks, and in consequence of which it is sometimes named Acer parvifolium, or the small-leaved Maple. The only full-sized trees of this scarce Maple near London, or, perhaps, in England, are in the Victoria Park; but it is to be regretted that they are there placed in the interior of the plantations, and completely hidden. The length of a full-sized leaf is 5 inches, including the footstalk, which is 2½ inches long, and the breadth is 3½ inches.



A. granatense.

WILD PLANTS A GUIDE TO SOILS.

The common Heath (Calluna vulgaris) grows naturally on most of the barren land that is suitable for tree planting. When it is rank and strong-growing, it indicates deep, black, mossy soil—poor and naturally unfertile, but which, if dry, and the altitude not too great, will grow Scotch Fir and Birch; if wet, Scotch Fir, Spruce, and Alder; but even for the last, it must be drained previous to planting. If the Heath is close and healthy, and mixed with Club Moss (Lycopodium clavatum), Tormentil (Potentilla Tormentilla), and some of the common Grasses, the soil is more fertile and suitable for Scotch Fir, Larch, and Birch. Some very healthy and thriving Larch and Scotch Fir plantations are growing on soil where these plants luxuriate. Ash, Beech, Elm, Oak, and Plane will grow there for ornament, but not for profit. The Cowberry or Cranberry of the Highlands (Vaccinium vitis idæa) is generally associated with the common Heath and Soft Grass (Holcus lanatus). It indicates a light sandy or gravelly soil, generally very hard and retentive; grows Larch and Scotch Fir, but they sometimes become affected with ground rot when from fifty to sixty years old. Birch and Mountain Ash thrive admirably upon it, but are not profitable. The Bilberry (Vaccinium Myrtillus) is generally found growing with the common Heath, and the Hard Fern (Blechnum boreale), Tormentil, &c. It indicates a superior class of soil for Scotch Fir, Larch, and Silver Fir, but especially the first—a heavy crop of which is almost invariably found on soils where the Bilberry is plentiful. If the situation is on a sloping hill or side of a ravine, the Norway Spruce, Ash, Beech, and Elm will succeed admirably on the level ground, or in the bottom of the ravine. The common Juniper (Juniperus communis), accompanied by the Bracken (Pteris aquilina), is very common in the districts where the Scotch Fir may be said to have its native habitat: indeed, in some Scotch Fir woods it grows as rank and profuse as the Furze, and makes excellent undercover. The soil is generally good for growing Pines where the Juniper grows, but occasionally varies in depth. The trees named as suitable for growing on the Bilberry land will grow with the Juniper; but we would prefer, for a profitable crop, to keep to the Scotch Fir, Larch, and Birch, giving the preference to the first, which almost invariably produces a heavy crop, and good quality of timber, on Juniper ground.

The common Whin or Furze (Ulex europæus) is very abundant on waste land, and seems to be such a selfish plant (if I may use the term), that other plants are rarely growing with it; but in close proximity, on good soils, are to be found Ragwort (Senecio Jacobæa), Thistles (Carduus), wild Clover (Trifolium), &c.; and on the poorer soils, Crowberry (Empetrum nigrum), Sorrel (Rumex acetosella), Carices, &c. The Ragwort and Thistles must be understood as applying to uncultivated ground; for if the ground has been cultivated, these are only a criterion as to fertility, and not to depth or quality of soil. The Furze, at a casual glance, is not a safe criterion as to the quality and kind of soil, as it will grow almost anywhere. Before fixing the quality of the soil, it is necessary that the quality and size of the Furze should be considered; as it is only on good loamy soil that it developes strong stems and branches. When it is found growing thus, the ordinary hard woods may be planted, along with Spruce and Silver Fir. If the situation is sloping or the sides of a glen, Larches will succeed; but they seldom attain a large size among Whins on flat ground. When the Whin is dwarf in habit, and the stems slender, it indicates thin gravelly soil, with a hard bottom, unfavourable for growing any kind of forest trees—Birch, Scotch Fir, and even Larch will grow if they can get a start; but the Whins are so aggressive that it is only by careful treatment that the trees are enabled to overtop them. However, when they do so, success is gained, as the Whins offer no further opposition. Although we have said that slender and dwarfish Whins indicate poor soils, there are exceptions, as in the case of Whins that have been burned or cut over; or, again, on ground that has been reclaimed, and afterwards allowed to return to its natural state. Under any of these circumstances, the Whin is slender and dwarfish for a short time. Taking the Whin alone, it is not a plant on which much dependence can be placed as a criterion of the quality of the soil; but when viewed with the plants growing in its immediate proximity, I consider it affords a sufficient indication of the soil above mentioned. The common Broom (Cytisus scoparius) is invariably found on dry situations, and always indicates a fair soil. If it is strong and healthy, and growing along with the Yarrow (Achillea Millefolium), Bird's-foot Trefoil (Lotus corniculatus), wild Clover, Tormentil, &c., the soil and subsoil are invariably good for planting trees. The kinds most suitable, if the situation is moderately sheltered, are Beech, Oak, Norway Maple, Plane, Larch, Silver and Scotch Firs; but if the situation is exposed, the Larch and Scotch Fir produce the most valuable crops. The Bramble (Rubus fruticosus) and Dog Rose (Rosa canina) indicate a good loamy soil, generally inclining to clay, very suitable for growing ordinary hard woods, as also the Austrian Pine and Silver Fir. Although the Bramble and Dog Rose are always found growing on dry portions of soil, still ground in close proximity and the subsoil are often wet, and require to be drained before planting. The Raspberry (Rubus Idæus) is often found on soils similar to the last, and denotes similar results; but it is also found on higher, more exposed, and poorer soils than suits either of the two last. When found thus, its stems are slender and short, and the leaves small, indicating a light soil suitable for Scotch Fir, Larch, Beech, Birch, and Mountain Ash. The bog Myrtle or sweet Willow (Myrica Gale) is common in some districts, often accompanied by the cross-leaved Heath (Erica tetralix), but invariably grows on a poor, wet, sandy soil, unsuited for trees; but, if thoroughly dried, will grow some of the hardy species, as Birch, Alder, Mountain Ash, and Scotch Firs.

The foregoing are some of our most common native shrubs; but there are some other species of flowering plants that are as much to be depended upon, as indicators of soils, as these are, and sometimes the flowerless plants are more reliable than others. The Male Fern (Lastræa Filix-mas) and the Bracken are not safe criterions as to the depth of the soil, but they can always be depended upon as to quality, for neither of them grow on bad soil. It is invariably good soil when they are accompanied by the common Bugle (Ajuga reptans) and the Primrose (Primula vulgaris), which are generally found in low-lying situations, or hollows, where an amount of soil has accumulated; and it may be asserted, that in this variety of soil almost any forest trees will succeed. But we particularly recommend, for the sheltered portions, the Silver Fir, Douglas Fir, Larch, Pinus Laricio, Elm, Ash, Plane, and Chestnut; and, for the more exposed parts, Larch, Scotch Fir, Beech, Norway Maple, Plane, Oak, and Birch. The appearance of the Foxglove (Digitalis purpurea) among common Ferns indicates a medium soil, inclined to be dry, but on which a great variety of trees will grow, and which I consider particularly suited for Beech and Scotch Fir. If the common Ferns are mixed with the Polypody (Polypodium vulgare), St. John's wort (Hypericum), &c., along with a sprinkling of Heath, the soil is generally more shallow, and contains large stones or boulders. Still, although shallow, it is always kindly, and will grow forest trees better than its appearance would indicate; but the Larch, Scotch Fir, Birch, Mountain Ash, and Hazel, are the varieties that thrive best on this soil. The Inland Bent (Juncus squarrosus) and the small Sedges (Carex) are generally found growing along with short Heath, and indicate a poor soil, with a retentive and impervious subsoil, invariably inclining to be wet, and in its natural state only suited for growing some of the common Willows, dwarf Birch, and Alder; but if drained, it will grow Spruce, and even Scotch Fir. In recommending Spruce, I am supposing that the situation is moderately sheltered, as these plants are often found at altitudes and in exposures quite unsuited for the growth of Spruce. Even the Alder, Birch, and Scotch Fir are seldom profitable trees on soils where the aforesaid plants are abundant. The Sheep Fescue (Festuca ovina) and the Wire Grass (Nardus stricta) are often found growing together, and, to the casual observer, may be taken for the same plant. They form the principal vegetation of some upland districts, and denote a dry, thin soil, comparatively rich in vegetable matter, but not very suitable for the growth of trees. The kinds most suitable are the Birch and Mountain Ash. The difficulty in growing trees on soils where these grasses predominate is more owing to the situation and the herbage than to the soil, as to all appearance the latter is generally good; but the situation, being so much exposed, is dried up in the summer season, and, during the winter, the herbage is so close that the moisture does not penetrate it readily. But when trees can be got to cover the ground where this herbage grows, their success is secured. The Tufted-hair Grass (Aira cæspitosa) is generally found on light or sandy loam (usually poor), resting upon bluish clay, or sometimes running sand. The soil naturally is too wet for growing trees, but when drained is suitable for Ash, Elm, Poplars, Willows, and Spruce. The soil on which this grass grows varies, but still admits of the profitable cultivation of any of the trees before recommended.

The Broad-leaved Flag (Iris Pseud-acorus) is invariably found in hollows or flat ground, and indicates a brown, loamy soil, chiefly composed of vegetable matter. The situation is generally wet, but when drained is very suitable for growing tree Willows, grey, white, and black Poplars, Lime, Horse-chestnut, Ash, Elm, Spruce, &c. Where the Iris is close growing and abundant, it is sometimes difficult to get young trees to start, without deep trenching or pitting of the ground before planting, the former being preferable. The common Rush (Juncus effusus) is not particular as to soil, if the situation is sheltered and damp. The variety of soil is indicated by its habit. If robust, the soil is similar to that of the Iris, and will grow the same kind of trees; but if slender, the soil is poor, and principally composed of sand or a light loam, most suitable for growing Alder and Spruce. Rushes afford an unmistakeable proof of dampness, and the ground where they are found growing must be thoroughly drained before planting. It is sometimes necessary to trench it, but not always, as there are often spots where the trees can be planted. If the ground be well drained and the trees succeed, the rushes will soon disappear. The Reed (Phragmites communis) indicates a strong soil, sometimes inclining to clay, and sometimes to moss, but always full of vegetable matter, and surcharged with water, so much so that no trees will grow on it until the ground is drained. The situation is always in flat or hollow ground and sheltered. The trees most suited to this soil are Spruce, Alder, white and grey Poplars, Huntingdon, Bedford, and white Willows. Some of the best specimens of Willows are to be seen growing on soils where Reeds were once abundant. The treatment required before planting is much the same as that recommended for the Iris.

The Queen of the Meadow (Spiræa Ulmaria) and the wood Hyacinth (Endymion nutans) are plants indicating a deep loam or alluvial soil, sometimes with a sandy bottom inclining to clay; generally damp, but not so much as to hinder the growth of trees; of course, where too damp, it must be drained before planting. On this class of soil all the varieties of forest trees grow well. Some of the largest Poplars and Willows and best matured Oaks and Larches that we have ever seen were grown on this description of soil. Some of the Mosses are also sure indicators of soils. Conspicuous among these is the grey Moss (Trichostomum lanuginosum), so common on some hillsides. The presence of this plant is a beacon to the forester, warning him of "rocks a-head," in other words, not to expect great returns from any trees that may be grown in proximity to it. It is found growing on hill tops and mountains, where few other plants grow. It is also often found growing along with the common Heath, and the inexperienced may be led into a mistake as to the fertility of the soil, as some allow that trees can be grown wherever Heath will grow. No doubt, where the Heath is growing along with the Moss, it indicates an improvement on the situation where the Moss is found growing almost alone; still, wherever the Moss is abundant, a profitable crop of trees cannot be grown; but where (for the purposes of ornament, &c.), it is necessary to plant the ground, the trees most suitable are Scotch Fir, Pinus montana, Birch, Alder, Goat Willow, and Mountain Ash. Spruce can also be grown on the damp portions if the altitude is not too great. These will grow and have a fair appearance, but, as I have said, they will not be a profitable crop. The wood Mosses (Hypnum) are most common on ground where a crop of trees has been previously grown. They generally indicate a light, open soil, resting on whin or trap rock, suitable for growing Larch, Scotch Fir, Norway Maple, and Birch. In planting ground where these Mosses are abundant, it is necessary to pare them off before inserting the plant, as, if they are left, they absorb the moisture that should go to the nourishment of the plant. This does well when small plants are used, but when a successful crop is wanted on ground where a crop of trees has been previously grown, it is safest to have the ground pitted previous to planting. The white or Bog Moss (Sphagnum) is characteristic of wet, stagnant situations, with a considerable portion of porous peat in the soil. If thoroughly dried and solidified, it will grow fair specimens of Alder and Spruce, but to attain this, the drainage must be carefully attended to. The Hair Moss (Polytrichum commune) is also invariably found in damp situations, but indicates a firmer and better class of soil than the last. The cross-leaved Heath (Erica tetralix) is generally in close proximity. The ground is always wet, but when thoroughly drained it will grow Spruce, Alder, and Scotch Fir, grey and Balsam Poplar. The soil is generally brown peat, naturally poor, and the subsoil gravelly, and sometimes soft bluish clay.

I have purposely omitted the nutritious natural Grasses so common in meadows and cultivated ground, as it is well known that these only grow upon a quality of soil that is seldom appropriated to the cultivation of forest trees; but on which all the varieties of trees seem to luxuriate. My aim has been, not to multiply indicators, but rather to select a few well-known plants that form positively an index to the kind of soils on which they grow, and, at the same time, so common as to be found in every district.—*W. Gilchrist, in Scottish Arboricultural Transactions.*

ROAD-SIDE TREES AND TELEGRAPH WIRES.

I AM glad that Mr. NcNab has directed attention to this subject; for really the disfigurement is awful, and the loss of beauty irreparable. But it is more than a mere matter of beauty; it is also an interference with the rights of property. Let me state a case, and there are many such:—A small proprietor in a district of the south of Scotland much frequented by tourists for its picturesque beauty, has a house with grounds and a small plantation at the roadside; also hedgerow trees along the sides of the road, of ninety or one hundred years' growth, bowering together overhead as they reach the gate, and carefully pruned to form a short arched approach. Some years ago, a series of peeled trees or long poles were quietly laid down along one side of the road, and by-and-by they were set up one fine morning before people were up; no leave was asked or obtained, and no money paid; the poles have iron wire guys fixed through the hedges into the fields, all complete. Last year cut branches were noticed thrown down behind one of the hedges, and it was seen that some pruners had been at work, in a small way, clearing the telegraph wires. This year, even during the rainy weather, it was found that a much more serious gang of destroyers had been at work—no leave being asked or obtained; large limbs were cut off the trees, and ornamental hedgerow trees have been converted into a series of hideous scarecrows. What remedy is there for these surely lawless proceedings? How indeed can a remedy be found for the destruction of trees? Man's life is not long enough to see them repaired, and no money can pay the value of such damage. The fields referred to might be let for building purposes, but what a loss to their value from this point of view, is the destruction of the trees! This is a free country, but who would expect that a freedom of this kind would be taken without some permission being asked or obtained.—*A Lover of Trees.*

LIFE: ITS DURATION IN PLANTS.

Plant-life may be considered under three general denominations. Some species are annual, or rather semi-annual, living from spring only to the close of the autumn of the same year; others are biennial, living to the close of the second autumn, but never beyond it; the greater part are perennial, or competent to live for a long series of years. Annuals include many of the commoner garden-flowers and culinary vegetables, which require to be freshly raised from seed every season; biennials are likewise common in gardens: perennials comprise all those herbaceous plants which form the staple vegetation of a country, withering, to a certain extent, during winter, and even dying down to the roots, but sprouting afresh with the return of spring; also all trees and shrubs, whether deciduous or evergreen. The perennials exhibit as great diversity in lease of life as the different species of animals. Some decay in as few as four or five years; others, often remarkable for their odoriferous and balsamic qualities, as Sage, Balm, and Lavender, endure for ten or more: next come the larger and robuster kind of shrubs, as Rhodendrons and Azaleas; then such trees as are of rapid growth, and the substance of which is soft, as the Poplar and Willow; and lastly, those mighty, slow-growing, solid-wooded pillars of the forest, as the Cedar and Oak, at whose feet whole nations rise and fall.

How vast are the periods of life allotted to longæval trees may be judged from the following list of ages known to have been reached by patriarchs of the respective kinds named:—

	years.		years.		years.		years.
Cercis	300	Larch	576	Walnut	900	Oak	1,500
Elm	335	Orange	630	Oriental Plane	1,000	Cedar	2,000
Ivy	450	Cypress	800	Lime	1,100	Schubertia	3,000
Maple	516	Olive	800	Spruce	1,200	Yew	3,200

Four and five thousand years are assigned to Taxodium and Adansonia, and Von Martius describes Locust-trees in the South American forests which he believes to have begun their quasi-immortality in the days of Homer. Whether or no, it may safely be asserted that the world possesses at this moment living memorials of antiquity at least as old as the most ancient monuments of human art. How grand and solemn is even the thought of a tree coeval with the pyramids of Egypt and the sculptures of Nineveh, yet still putting forth leaves, and inviting the birds to come and "sing among the branches!"

NOTES AND QUESTIONS ON TREES AND SHRUBS.

New Ornamental Cherry.—A remarkable sport of the May Duke Cherry has been produced in the grounds of M. Ferninand Messange, of Baillonville. The leaves become narrow at the end, so as to resemble those of the Peach, or even the Willow. Some are 8 inches in length and an inch in width: others are 4 inches in length, and about the third of an inch in breadth.—*Belgique Horticole.*

Rabbits and Conifers.—It is difficult to get two people to agree as to the trees with which rabbits and hares meddle. One of your correspondents says, "Rabbits and hares cut Pinus Laricio very much if planted small, but do not touch Pinus austriaca." Now, as for the latter, I can confidently assert that they cut it more than any other of the Pine tribe. With me they have attacked and thoroughly destroyed fine plants of it 4 and 5 feet high. A neighbour who has planted P. Laricio largely (I have none except guarded) says that it is rabbit proof, and, on his assertion, I am planting some hundreds of it this season. The fact is, I believe, in a really severe season rabbits will attack anything—in a deep snow I have had Yews eaten down—but in the generality of years certain things escape.—A Soldier.

THE GARDENS OF THE ANCIENT ROMANS.

(*Continued from p. 550, Vol. II.*)

The hint given by Virgil was taken up by Columella, a poet who seems to have flourished during the reign of Claudius, or some time during the first fifty years of the Christian era, and who wrote a long poem upon the same subject as that of the Georgics, closely copying the style, the language, and the imagery of his great master; chastely and elegantly without doubt, but still only copying. In the tenth book of this poem, he devotes a considerable space to what Virgil had proposed, but when at the end we are very little better informed than before beginning. As for the other Roman poets, they make no more than passing allusions to gardens; and were it not for the minute and extended description given by the younger Pliny of his summer villa in Tuscany and its surroundings, we should positively have no exact written account whatever. This beautiful retreat was situated in an amphitheatre of the Apennines; its owner was a philosophic patrician of literary tastes, and there can be no doubt that the garden itself was laid out according to the very best ideas in vogue at the time. The date of the description would be about A.D. 95, or in the reign of Trajan. In one part you have a little meadow; in another a walk is bordered with Acanthus; beyond is a knot of dwarf Planes. The Box trees, which thrive upon every side, are cut and clipped into the artificial shapes called "topiary work." Fruit trees are used in plenty, alternating with obelisks or statues; presently we reach an alcove shady with the green of Vine leaves. Water is introduced freely, many little fountains, each with its marble basin, refreshing the atmosphere. Besides these, there are spaces for simple games, with plenty of marble seats, where the friends of the noble proprietor can rest themselves and enjoy the scene. So far the illustrious Pliny; and so far, no doubt, the scene described was very charming in its way. But how little about flowers! The delight of the garden seems to have consisted in its plentiful shade, its alleys and plots of green, the consummate order and neatness, the rich infusion of works of art, sculptures in marble that would put the verdant ones to shame, the sense of moving water, always agreeable and soothing, the feeling of seclusion, and that incomparable one, leisure to enjoy. At the same time it was essentially stiff, rigorous, and formal; in some respects, it would seem, geometrically precise. Many, perhaps all, of the highest class Roman nobles possessed gardens of similar character, either at their country seats or close to the city, allusions to them occurring in Claudian, Seneca, and other writers, but still the intimations as to their contents are meagre in the extreme, and what we read of least is the *flower portion.* Fortunately for our curiosity, there is another source of information, limited, but quite as trustworthy—that which is supplied in the ancient paintings uncovered at Herculaneum and Pompeii. Like their antetypes in the Egyptian tombs, in the midst of their inexpressible mournfulness of association, these, at all events, speak the truth. Take, for example, the pictorial representation of a garden in Sir W. Gell's Pompeiana, part 2. Here is pourtrayed much of what Pliny indicates, but on a smaller scale, and omitting many of the best elements; here are the hedges of Box or Rosemary, the larger evergreens, such as the Bay and the Cypress, the pots and boxes along the edges of the pathways and upon the window-ledges, and the general geometrical idea which furnished, from another source, the models for the Dutch gardening of the seventeenth century, and from which, though it struggled hard for life, we may be thankful our present age has been nearly liberated. The practice in the Roman method of gardening which would now be most generally disapproved, would probably be the clipping of the evergreens into likenesses of animals, columns, statues, &c., though the practice survived for so long a roll of centuries as to obtain almost a freehold right, and in special corners is still extant. Among the Romans themselves were men keen enough to detect the error of so maltreating shrubs, the proper outlines of which we may presume are best known to nature, who first traced them, since, in another of the epigrams of Martial, not only is ridicule cast on the ranks of Laurel and Cypress, but more vigorously yet on the tortured Box trees. Martial was right. To mutilate a tree or shrub unnecessarily, to pervert and obliterate its natural outlines, is every bit as indefensible as "cruelty to animals," and a deed that ought to be included in a horticultural penal code. It has been said that there is no cruelty which a bad-hearted man will not inflict upon a brute creature, so long as the unfortunate beast does not cry out: perhaps if the trees and shrubs possessed voices, the "topiarian art" would have been practised somewhat less. It began with the admirers of gladiatorial combats, and of the sanguinary sports of the Coliseum—with Pagans, in the dictionary of whose language the word "tender-heartedness" does not occur; with these it should have been left; to their memory it should now be consigned. There is only one thing worse horticulturally than the ancient Roman mode of shrub-torment, and that is wilful and reckless arboricide, especially when the tree destroyed stands where the like of it can never grow again. Many and great were the services rendered to taste by Alexander Pope, but never was there a sounder one than in the satire where he addresses himself to this topiarian art.

> His gardens next your admiration call;
> On every side you look, Behold the wall!
> No pleasing intricacies intervene,
> No artful wildness may perplex the scene;
> Grove nods to grove; each alley has a brother,
> And half the platform just reflects the other.
> The suffering eye inverted nature sees,
> Trees cut to statues, statues thick as trees;
> With here a fountain never to be played,
> And there a summer-house that knows no shade.

Use the pruning-knife and the shears by all means. The unshapely, the untidy, the incompatible, are always to be corrected, and kept in check. Let nature be as *degagée* as you like, but never unkempt and in *deshabille*. Shakspere has given us sweet and sound enough lesson as to that, in the beautiful passage wherein he calls our little island our "sea-walled garden," for garden it truly is; and when a man wants a pattern for his private *hortus* he cannot do better than mentally survey an average English county, with all its varied charms of nature and art, bringing together in harmonious order the spontaneous and the polished, and leaving no element untouched that has been the pride and property of old England since it "arose from out the azure main." Even formality and straight lines are not at variance with the perfection of gardening. The right course is to employ them in the right places. Broad terraces near the mansion; noble avenues of aspiring trees; green corridors that take form almost of their own accord, like the aisles in a cathedral; these rank with the proprieties of all truly artistic gardening, and are always springs of delight to a hospitable and polished mind. What is odious is neither precision, nor geometry, nor the use of cold steel, but the malversation of nature's grace into the semblance of a casting from a foundry, or of a corps of trim militiamen on parade.

The redeeming feature in the topiarian art, as practised in the Roman gardens, was that the workman was allowed at times to cover the walls and terraces of his employer's villa with Ivy, leading the same elegant climber, when convenient, into the trees. How beautiful is this gracious plant, balanced upon some ancient bough, overhanging a ravine or a stream! or if it do but play the centipede, and keep to the main trunk, with those matchless and sinuous creepers, and leaf-angles in every attitude that is possible to joyous freedom. Either way, any way, still how perfect! We must forgive the Roman noble for his Box-tree clipping, since he loved old Hedera Helix. An act of kindly grace should always be the first to think of, and this leads us to inquire what were the merits of the Roman gardening. Anything that takes a deep hold upon a people's fancy must needs be founded upon something better than mere caprice, and certainly not wholly upon ignorance. Because landscape gardening, in our modern sense of the term, found no favour with the Romans, and because a display of floral beauty seems never to have been imagined, we are not, by any means, to look with contempt upon the Roman gardening. No man will do so who is just and consistent, seeing that it aspired to realise a kind of beauty totally different from that which engages the cultivated taste of our own period; under special circumstances, perhaps, it possesses recommendations which entitle it to a certain degree of practical observance even now. The Roman style of gardening, though greatly advanced in comparison with that of the Egyptians, was a thing of the childhood of horticulture; yea, of the childhood, in many respects, of human progress; for, let us consider a moment, and we cannot but allow that the times commonly called the "old" ones were, in reality, the *young* ones. When geometrical gardening was invented, and regarded as perfection, science and floriculture were only finding their feet. The times we live in are the genuine "old" ones, and, as Lord Bacon said long ago, we who inherit the gathered wealth and the traditions of fifty ages, are the real "old" people of the world. Geometrical gardening is a purely inventive art, in a certain sense resembling architecture, and is governed by similar principles, the art being everywhere avowed. Landscape gardening, on the other hand, is like painting and the drama, which directly imitate nature, but studiously conceal the art by which the end is attained. The hand of man should be as visible, nevertheless, in gardens laid out in the natural style as it is in the geometric, only after another fashion; since for the consummate feeling of the beautiful, it is essential that we should recognise in it some expression of human intelligence. An extended prospect of mountain, valley, woods, plains, and a shining river, let the components be wild, grand, or romantic as possible, is never so delightful in its untouched condition as when it presents traces of thought and science. Look down from the slopes of the glorious mountains of the lake district, or of North Wales, or of Connemara; then from the sweet green thymy hills of Surrey or Somersetshire, and note the contrast with the wilderness of the peculiar charm conferred by the spectacle of orchards and farmsteads, the arches of the dimly-seen railway viaduct, the pearly clouds that tell of the passing locomotive. If this be true of the "sea-walled garden," none the less true is it of the miniature one, which even in its least cultured parts becomes animating exactly in the degree that it breathes consciousness of the touch and genius of a nature greater than itself. To a certain extent, geometric gardening also imitates nature, but the imitation is conventional, or after the fashion of that displayed in carpets and parlour-wall papers.

It follows that the more that either of these two styles is improved, the more widely will it differ from the perfection of the other. Also that while landscape gardening possesses qualities peculiar to itself, so likewise does geometric gardening, each style being the outbirth of the times in which it flourishes, and bearing a certain relation to the general temper of the country. The gardening of the Romans was perfectly natural to them, regarding the circumstances in which they were placed; and as it satisfied their wants, and supplied aspects which they deemed beautiful, the idea of a garden was, so far, perfectly realised.

Gardening, in a word, as an art of design, must be judged of in reference to the climate of the country, and to the habits and manners of the people, quite as much as by the light of the first principles of natural symmetry and beauty. Divested of certain adjuncts proper enough to climates warmer than our own, and purified of its decorative extravagances, the idea of the Roman style of gardening cannot be regarded as absolutely devoid of merit. A sorrowful day for England and for horticulture would it be, should public fancy ever relapse towards it upon a large scale;—that, however, is a danger there is no occasion to forbode;—all we contend for is that regarded from a Roman's point of view, it had abundant justification, and that should Romanising ever become proper in England, the models left by the Romans are unimpeachable.

The truest idea, the essential and fundamental one of the whole matter, consists, after all, not so much in the fact of landscape-gardening being the antithesis of the geometrical, as in its abiding by the principle laid down by Quatremère de Quincey, that "to imitate in the fine arts is to produce the resemblance of a thing through the medium of some other thing, which becomes an image of it." Just this and no other is it which distinguishes between the artist and the mechanic; the former gives an ideal copy, the latter only a fac-simile. Applied to horticulture, of course understood as practised on a large scale, De Quincey's axiom would imply the extensive and tasteful incorporation of exotic trees and flowers; the exclusion of nothing but what is weedy and coarse, and the encouragement of everything that is graceful and pretty, and that shall seem to be the original sowing of nature's own hand. The greater the variety of forms, and hues, and boundary lines, the more classic the physiognomies, and the more liberal use, at the same time, of what is often quite as foreign, practically, as a plant from the antipodes—the flora of the English woodland—so much the more picturesque will the garden become; so much the more perfectly will nature and art be harmonised, and the privilege of humanity be vindicated. Rarely are single and solitary ideas fruitful. All beauty and perfection come of duality; a genuine garden infallibly reminds one of that ancient and innocent union which received the first blessing of God, both illustrating at the same time that most lovely line of the Laureate's—

> "Like perfect music set to noble words."

Not that the beauty of a garden calls for the indiscriminate crowding together of all sorts of trees and plants. This is to induce failure in one principal source of beauty, wherever we may seek it, namely, a complexion of warm and rosy health. The beauty comes of the choice and the adjustment. Good gardening, in a word, depends less upon quantity of plants, and expenditure of bodily strength, than upon well-educated labour of the brain. Industry is good, but a thinking head is better. The mistake too frequently committed is that of confounding plethora with wealth, and mere ornament and tinsel with pure and original beauty; and one of the weakest forms it assumes is that which gives leave only to a certain set of legalised things to come in, nine-tenths of nature's loveliness being consigned to a sort of *Index Expurgatorius*. LEO GRINDON.

Epiphytes on a Prostrate Tree.

EPIPHYTES ON A PROSTRATE TREE.

OUR illustration of a prostrate tree in a Brazilian forest, covered with Arads and other epiphytal plants, shows a frequent and interesting aspect of vegetation in the hot and moist regions of South America. Many of the great creeping Arums, and other easily grown stove plants now in cultivation, might be used with good effect in forming miniature pictures of the same type in our hothouses, allowed to grow on rough branches, or arranged on rockwork.

THE LIBRARY.

SMALL FRUIT FARMS.*

HOW THEY CAN BE MADE TO ANSWER.

THIS is an excellent little book, the object of which is sufficiently clearly indicated in the title. The author rightly thinks it a pity that the class intermediate between the labourer and large farmer should have disappeared, and he clearly shows how it is possible to make small holdings in England pay well as fruit farms. The following on Plum culture will show how capable the author is of treating the question from the above-mentioned point of view :—

PLUMS.

We will now pass on to the larger kinds of fruits, from bushes to trees, such as Plums, Apples, Pears, and Cherries; and I put Plums first of all in my list, because they produce a much earlier return than the others: indeed, so much so that it would pay a tenant to plant them on a fourteen years' lease, whereas the others, if planted on the usual orchard stocks, are a landlord's improvement, and in most cases are planted for the benefit of the next generation. The Apple, Pear, and Cherry, on the usual orchard permanent stocks, do not become sensibly profitable till they are twelve or fifteen years old; whereas the Plum will produce a good return after six or seven years, and some sorts even earlier than this. The most profitable way of planting Plums will be to put them in together with Currants or Gooseberries at intervals of 24 feet, which will take seventy-five trees to the acre, or even at intervals of 12 feet, which will take 300 trees to the acre. When the Gooseberries or Currants are wearing out, which will be in fifteen or twenty years, the Plums will have covered the ground, and will bring an ample profit. I find that trees of the Pershore Egg Plum, which I planted in 1865, have this year produced on the average 30 lbs. weight of fruit each, which, at the rate of 5s. per pot of 90 lbs., is a return of 1s. 8d. each tree. The mention of this pot reminds me that in the Midland counties all fruits and vegetables are sold wholesale by the "pot," as it is called. A pot is an oblong basket with a handle at each end, and without a lid. All the pots have these points in common, and being in such universal use, one would have supposed that they would have a still more important point in common—I mean a fixed and definite capacity; but this is not the case, there are pots and pots. This was one of the first lessons I learnt in farming: on going to buy some pots I was asked by the maker whether I wanted buyer's pots or seller's pots; and on inquiring the difference, I was informed that buyer's pots were larger pots, and seller's pots smaller pots, and that there was a difference of nearly a peck, or one-fifth, between them; and the different capacities of pots are so well known, that a remedy has been invented which is almost as bad as the disease. A certain conventional weight is required for a pot of every variety of fruit or vegetable; and if these weights were the same in different districts, there would only be the trouble of keeping the different weights in one's head. But this is not the case—the weights vary in different parts just as much as pots do; a pot of Potatoes is 95 lbs. in one place, while twenty miles away it is only 80 lbs. A pot of Plums varies even more than this—in one part it is 90 lbs., in another 72 lbs. The true remedy would be to buy and sell everything by weight, irrespective of these fictitious measures, which vary in every district. So much for pots. The question we have to consider is, what varieties of Plum will fill them soonest, and bring the best return to the planter?

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* "Small Farms: How they can be made to Answer." By the Rev. W. Lea, M.A. London: 171, Fleet Street.

PROFITABLE MARKET PLUMS.

Now, this question will be answered differently in different districts. In some it will be the Prune Damson, in others some other variety which has proved itself most congenial to the soil; but wherever the soil is strong and retentive the Pershore Egg Plum should form a considerable portion of every plantation. It is the hardiest of all Plums, the surest cropper, and the wood is tough, and the branches will bear an enormous weight of fruit without breaking. It is said to be a short-lived tree; but I know trees in full vigour which have been planted at least a quarter of a century. It brings a lower price than other Plums, but I think, in the long run, it will pay better than any other on the average. In fact, Plums for market purposes may be divided into two classes—yellow or Egg Plums, and coloured Plums; the latter in most years are worth nearly double the price of the former. Among coloured Plums the best are the Victoria, the Prince Englebert, Pond's Seedling, the Black Diamond, Belgian Purple, Kirke's Plum, Cox's Emperor, commonly called Jemmy Moor, Prince of Wales, Cluster Damson, Mitchelson's Damson, and the Belle de Louvain. The Victoria is a bright, large, pink Plum, an enormous cropper, always in demand, good for eating or cooking, still better, I am told, for bottling for use in spring; but it has one most serious drawback—the wood is extremely brittle, and my trees break every year under the weight of fruit. This, perhaps, may be in part owing to their being what is technically termed "standards for orchards"; and if I were to begin again, I would have nothing but "half-standards" grafted about 3½ feet from the ground, and then I should prune back till the lower branches were strong enough to bear the fruit. But notwithstanding this disadvantage, the Victoria should have a place in every plantation for its beauty and productiveness. I once saw long lines of this Plum alternating with Pond's Seedling; they were both ripe, and as the sun shone on their large pink fruit, which hung the size of eggs from the boughs, I thought I never saw a more beautiful sight. The old Greek sailors never imagined anything finer in the gardens of the Hesperides.

Pond's Seedling has the reputation of being an uncertain cropper, but with me it always bears freely, and produces finer fruit than any of the thirty sorts I have in my plantation; its wood, too, is tough, and will bear a large crop without breaking. Prince Englebert is an excellent black Plum, and an abundant cropper. The Black Diamond possesses the last of these qualifications, but after all it is a monstrous abomination. Rivers' Early Prolific is in some places a profitable variety, and, being the first in the market, usually realises a high price to the grower, but I cannot speak much of it myself, as I have been unfortunate in my trees. The nurseryman from whom I bought them sent them on what I believe to be Almond stocks, and the result is that they have not made any growth in the six years, and I am now about to root them up and burn them. This and other like experiences in buying trees lead me to offer a word of advice to intending planters on this head. I know nothing more disappointing, when a plantation has been made, than to find, when your trees come into bearing at the end of three or four years, that the nurseryman has sent them on bad stocks, or sorts untrue to name. It has been my misfortune to find this to be the case on several occasions. When I began, I ordered trees from several nurserymen, and after waiting some years I found, to my disgust, that what ought to have been choice Pears are in some cases nothing better than perry fruit, and Plums in like manner untrue to name. I should therefore recommend purchasers to visit the nurseries when the trees are in fruit and select for themselves.

PLUM TREE ENEMIES.

The blackbird is mischievous, and in August and September the wasps and hornets are troublesome; but the most destructive of all enemies is the grub of the Cheimatobia brumata, or Winter Moth. This moth makes its appearance about the end of October, and continues on the trees till the end of the year. The male is a small-winged moth, the female a wingless abomination, not unlike a bug, but longer in the leg and lighter in colour. She lays about two hundred eggs, either round the buds of the Plum or Pear, or in the cracks of the bark. These eggs are hatched in April, and a small caterpillar appears, which eats its way into the centre of the opening bud, and destroys all prospect of fruit. By the end of May it is full grown, and then lets itself down by a thread to the ground and buries itself in the soil, where it becomes a chrysalis. In this state it remains till the end of October, when it emerges again in its winged state.

This grub is the Plum-grower's greatest enemy, and many plans have been attempted for its destruction, the most successful being the encouragement of small birds, and if they were sufficiently abundant I question if anything further would be required. In 1865 I bought some trees from the neighbourhood of the Vale of Evesham, which is the head-quarters of this Winter Moth, and on examining them in December I discovered that I had bought some moths with them, for I caught ten female Cheimatobias one morning; but since that year I have never seen a specimen of them, and I conclude that the small birds, which are plentiful, have completely extirpated them; but where they are not so abundant, artificial means must be adopted. The fruit-farmers and their men turn out at night in November, with lanthorns, and kill the moths by hundreds on the stems of the trees. Hundreds more of the females are caught, as they climb the trees, in a mixture of tar and grease, with which the stems are smeared, and in some instances it is found necessary to pick the trees and destroy the caterpillars by hand; but all these means are troublesome and expensive, and I think would be unnecessary if a sufficient number of small birds could be induced to settle in the plantation.

DEVONSHIRE COTTAGE GARDENS.

Nothing can be prettier than the gardens attached to the thatched cottages in Devonshire. They are frequently to be seen on the side and oftener at the bottom of a hill, down which a narrow road leads to a rude single-arched stone bridge. Here a shallow stream may be seen flowing rapidly, and which now and then "stickles," to use a Devonshire phrase, over a pavement of either pebbles or rag-stone. A little rill descends by the side of the lane, and close to the hedge of the cottage, which is approached by a broad stepping-stone over the rill, and beyond it is a gate made of rough sticks, which leads to the cottage. At a short distance, an excavation has been cut out of the bank, and paved round with rough stones, into which the water finds and then again makes its way, clear and sparkling. This is the cottager's well. His garden is gay with flowers. His bees are placed on each side of a window, surrounded with Honeysuckles, Jessamine, or a flourishing Vine, and the rustic porch is covered with these or other creepers. Here, also, the gorgeous Hollyhock may be seen in perfection, for it delights in the rich red soil of Devonshire. Giant Stocks, Carnations, and China Asters flourish from the same cause, and make the garden appear as though it belonged to Flora herself. Nor must the little orchard be forgotten. The Apple trees slope with the hill, and in the spring are covered with a profusion of the most beautiful blossom, and in the autumn are generally weighed down with their load of red fruit. Under them may be seen a crop of Potatoes, and in another part of the garden those fine Paington Cabbages, one of the best vegetables of the county. In a sheltered nook is the thatched pigstye, partly concealed by the round yellow-faced Sunflower, which serves both as a screen and as an ornament. The mud or *cob* walls of the cottage add to its picturesque appearance, when partly covered with creepers and surrounded with flowers. Such is an accurate description of one of the many cottages I have seen in the beautiful and hospitable county of Devon. Those who, like myself, have wandered amongst its delightful lanes will not think my picture overcharged.—*E. Jesse.*

Protection Against Worthless Fertilizers.—New Hampshire has adopted a law to regulate the quality and sale of commercial fertilizers. The manufacturer must file a bond with the State Treasurer in 10,000 dollars, payable to the State, but with a condition that it shall be void upon compliance with the law, which requires that all fertilizers offered for sale shall be accompanied by a statement naming the date of manufacture, and the per centage of ammonia and other constituent parts. If these shall prove to be false (which is to be tested by the State Assayer on due application) a fine of 500 dollars is imposed on the seller, to be prosecuted for by the Attorney-General or any county solicitor. A fine of 200 dollars is imposed for offering fertilizers for sale without a license.

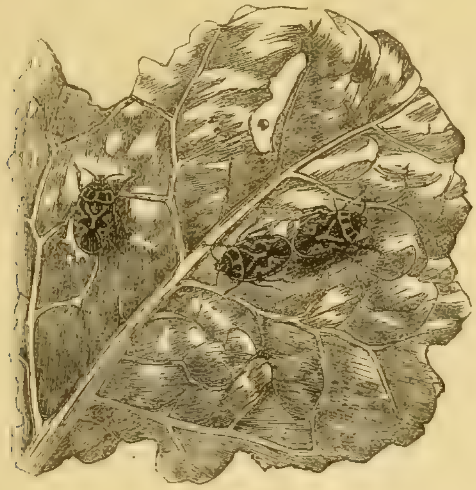
GARDEN DESTROYERS.

A CABBAGE BUG.

(STRACHIA ORNATA).

That portion of the bug tribe known to entomologists as the Heteroptera supplies few recruits to the great army of insects that prey upon the food of man, and compete with him for its possession. There are, however, some which do mischief, and the species which is figured (of the size of life) on the Cabbage-leaf in the woodcut is one of these. Not that we can say that it does harm in Britain, for there it is fortunately rare. But on the continent, and more particularly in some parts of France and the south of Europe and Algiers, the injury it does is sometimes considerable, and this is not confined to the actual injury done to the leaves by sucking their juices, but extends to the unpunctured leaves which it may have frequented, or on which it may have been crushed or squeezed.

The reader may not be aware that every individual of the bug tribe, from the large metallic and gaily-adorned species of tropical countries down to the smallest species in the most northern countries, are all distinguished by a peculiar odour—that of the common bed bug. This species has it abominably strong, and where it rests it makes the vegetable uneatable. We well remember the youthful surprise with which we first learned this fact by experience. We had received a bottle full of insects in spirits from the East Indies, among which were a number of beautiful large bugs, and the odour which remained on our fingers after handling and pinning these was such an intensified essence of bed-bug, and so difficult to get rid of, that we have never forgotten it. What the nature of this odour is is still a problem, but notwithstanding its abundance in some quarters, we doubt if it would be possible to procure a sufficient quantity of material to analyse or experiment upon for the chemist. There is indeed a popular tradition that the bed bug is one of the ingredients of "Soy," and if that be true, the material must be procurable in commercial quantities; but we have always regarded this as an unfounded aspersion upon an excellent sauce.



A Cabbage Bug.

Various species of scutate Heteroptera (that is, bugs with a large shield, covering, to a greater or less degree, their wings) feed upon the Cabbage; and the present species, and one or two allied species, are specially devoted to it. The eggs are laid on the under-side of the leaves in close little bands. Individually they share the beauty of the parent insect, and have it in something of the same character, well-defined black spots on a lighter ground. They look like little barrels, of which the top and the bottom are encircled with brown bands, while the middle is grey, marked with small, very round black points. When the egg is hatched, the insect inside pushes up the upper part of the shell, like a little lid, and, coming out, at once begins its work of feeding on the leaves.

The bugs, as the reader of course knows, have no mandibles or jaws, or rather these are converted into a sucking apparatus. Consequently the form their ravages take is not that of gnawed or skeletonised leaves, but of leaves riddled by little wounds, which render the leaf rugose, and covered by dried spots. The insect plunges its sucker into the parenchyma of the leaf, and sucks up the juice, as the bed bug does the blood of its victim. The larva is very similar in appearance to the perfect insect, with the exception that it has no wings. The insect is sufficiently accurately represented in the woodcut to render a description unnecessary. The paler parts are vermilion red, sometimes shaded with yellow, and the dark parts black. They are thus very visible, and may be easily caught and destroyed, but the under-side of the leaves must be looked at for the eggs. A. M.

An Efficient Rat Trap.—May I suggest to your correspondent "E. D. T." a very effectual way of disposing of the rats and mice in his garden. I have known it to destroy between fifty and one hundred of these pests in a single night. Take a large plant pot, say 3 feet in diameter at top and 3 feet deep; sink it into the ground till even with the surface, and place about 1 foot of water in it. Then take a deal board 3 feet long, 6 inches wide, and half an inch thick; saw off 1 foot of it, which must be smoothly planed and refastened in its place with two *easy-working brass* hinges; then fasten a weak steel spring on to the longer part of the board and reaching over the saw-cut on to the shorter part, so that by holding the board out horizontally, the spring will just hold this shorter part of the board on a level with the rest. The spring must, however, be only strong enough to do this and a very little more. This trap fall is then placed half-way over the pot of water, and a large stone is placed on the other end to hold it firm. The "drop" is then well greased on the planed side, and some *strong-scented* bait is nailed on to the extreme end. The rat will walk on to the "drop," which will not yield till he is fairly on; one step more, and down he goes into the water, the "drop" returning into position for another customer. If watched, it is amusing to see the efforts of the rats to retrace their steps, which, if properly managed, the trap never allows them to do. It is better to put something in the water, as quick-lime for instance, which will suffocate the rats speedily. "E. D. T." should put several of these traps into the ground in his garden.—Preston Powers, *Florence.*

Garden Destroyers in India.—A communication from Agra, dated the 12th ult., says:—"The crops in the Agra district were in such splendid condition, that cultivators were looking forward to a good harvest and a profitable out-turn. In a few short hours their hopes were blighted. A dense crowd of locusts came up from the south, and, after hovering in the air for some time over the city, they suddenly descended, and, covering the surface of the earth, of the trees, and of every particle of vegetation, they commenced their work of destruction, choosing more especially, as their most choice morsels, the youngest and most delicate leaves of trees, the choicest and most valuable of plants, and, what is more sad than all, devouring the green ears of grain just beginning to ripen. So thick was the crowd of locusts that the sun was completely hidden, and a partial darkness prevailed. The natives used all endeavours to dislodge the unwelcome visitors, but failed. They remained for some time, and then started in a northerly direction. A magnificent grove of trees has been utterly denuded of leaves, the grass has been cropped short, and whole gardens have been completely destroyed. Near a village called Uchennarra, on the Bhurtpore road, eighteen miles from Agra, the crops have been completely ruined, and such has been the damage done in other parts of the Agra district, that it is estimated that the out-turn will be 50 per cent. less than was expected before the locusts arrived. In this sublunary sphere it often happens that evils which are the causes of unmitigated sufferings to some creatures, cause joy and delight to others. The crows, kites, sparrows, and hawks, banqueted and feasted in a princely manner during the stay of the locusts, and many of the natives in the city captured them in basketsful, and afterwards feasted on them. I am informed that they make capital curry, and that they are very similar in flavour to prawns."

Peach Tree Insects.—Often a mass of gum is found at the base of young Peach trees, and small white worms are found in the bark beneath, which are the cause of the gummy exudation. They do not penetrate deep, and are not very injurious to the tree. The Washington Department of Agriculture report says they are the larva of the Mycetophila persica.

Rats and Mice.—Having had whole crops of Melons destroyed by rats, and having tried traps and poison with but bad results, this year I got two young cats early in the spring and kept them in the garden, and I have had no annoyance from rats or mice since. I would, therefore, advise your correspondent, "E. D. T." to try them. If he gets them young they will not seek to go away, at least ours don't.—D. M.

THE PROPAGATOR.

RAISING PELARGONIUMS.

Mr. Sisley, well-known as the originator of several choice varieties of double zonal Pelargoniums, describes his practice thus:—My friend Carrière, speaking of my double white zonal in the *Revue Horticole* of October 1st, says that it is the result of scientific combinations. I must decline to accept this encomium, and am willing to make the horticultural world acquainted with my very simple practice, which I have never kept a secret. When, six years ago, I began the artificial fertilisation of zonal Pelargoniums, I procured about fifty of the best varieties of single-flowered zonal Pelargoniums of different colours, and about 200 plants of the then existing double-flowered varieties. And until 1870 I continued to buy all the new double varieties that were brought out, and all the single-flowered sorts which were of different shades from those in my collection. Without any preconceived theory I fertilised all the single flowered with the pollen of the double ones which had stamens. For three years I did not obtain a seedling worth mentioning, and I was on the eve of giving up artificial fecundation, when in 1869 I obtained Victoire de Lyon and Clémence Royer, which, although not perfect in form, were very different in colour from any double zonal Pelargonium then produced. This led me to continue my efforts. I have not learned by my practice anything that can be called a theory, because among my seedlings coming from the same mother and the same father I have found them all differing from one another. My double white is the produce of a single white (one of my seedlings second or third generation) by a double red; but four other seedlings from the same fecundation are either white, pink, or red, and all single flowers. And in this there is nothing astonishing. Why should the laws of nature vary and act differently in the vegetable world from what they do in the animal world? Nature and science have not yet taught us why the offsprings of the same father and the same mother are always different from one another, notwithstanding their family likeness. And it is very likely that man will always be ignorant of this. The only thing I know, and every horticulturist knows, is that to obtain double flowers, single flowers must be fertilised by double ones.

PROPAGATION OF TREE CARNATIONS.

My plan of doing this differs entirely from that of "Quo." I propagate tree Carnations by means of cuttings to the extent of many thousands every season, and as I can depend on every cutting making a good saleable plant, I beg to recommend this method, which I find so successful. I have a box or pan well drained, and filled with compost as recommended by "Quo," taking care that the mould used is free from wire-worm. I place the box in a bottom heat of 75°. I trim the cuttings carefully; but do not cut off the ends of the leaves as many do, and I place them firmly in the mould, an inch or more apart, as suits my requirements. The glass with which they are covered must fit so as to be perfectly air-tight. Before putting it on give the cuttings a thorough drenching with rain-water with the chill off, till the mould is like mud; then put the glass on at once. Leave all undisturbed for three weeks, but water all round, if need be, to prevent the cuttings from getting dry. By the end of the three weeks, all will be found to be growing; give another week's grace, then remove the glass, and pot them off in small 60-sized pots. Replace them in a gentle heat, in order to start them, and give them plenty of water. I have frames that each hold three hundred plants, and it is rare, indeed, to find one without good roots. With "Quo's" remarks on the evils of permitting them to get pot-bound, I decidedly differ, as I can get as good blooms from plants in small 60-sized pots as from those in larger pots; and from experience I am quite satisfied that manure or manure water is poison to a tree Carnation. The compost mentioned and an abundant supply of water during every stage of growth are all that Carnations want. "Quo's" selection of varieties is good; but it should have included "La Belle," a pure white kind, very free, and a perpetual bloomer.

Biz.

Grafting Acers.—In the *Wochenschrift* Professor Karl Koch relates some interesting observations respecting grafting noticed by himself in the nurseries of MM. Simon Louis, at Metz. Acer ginnala, which has been recently discovered in Amooria, does not succeed when grafted on A. tataricum, which is, nevertheless, so closely allied to it that some botanists consider the two as forms of one species, while it succeeds perfectly when worked on the A. Pseudo-Platanus.

How to Increase the White Wistaria.—How is it that this plant is so scarce? True, there is a little difficulty in multiplying it, but if the following method is employed, the results will be most satisfactory. It consists in making cuttings from the roots, precisely in the same manner as is done with many other plants, such as Aralias, Tecoma, &c. It may also be remarked that plants thus multiplied are far more vigorous than such as are grafted, which is generally the means used for the propagation of the white Wistaria. This mode of propagation may be also used with equal advantage in the case of the common Wistaria.—M. Millaud.

THE INDOOR GARDEN.

ACINETA HUMBOLDTI.

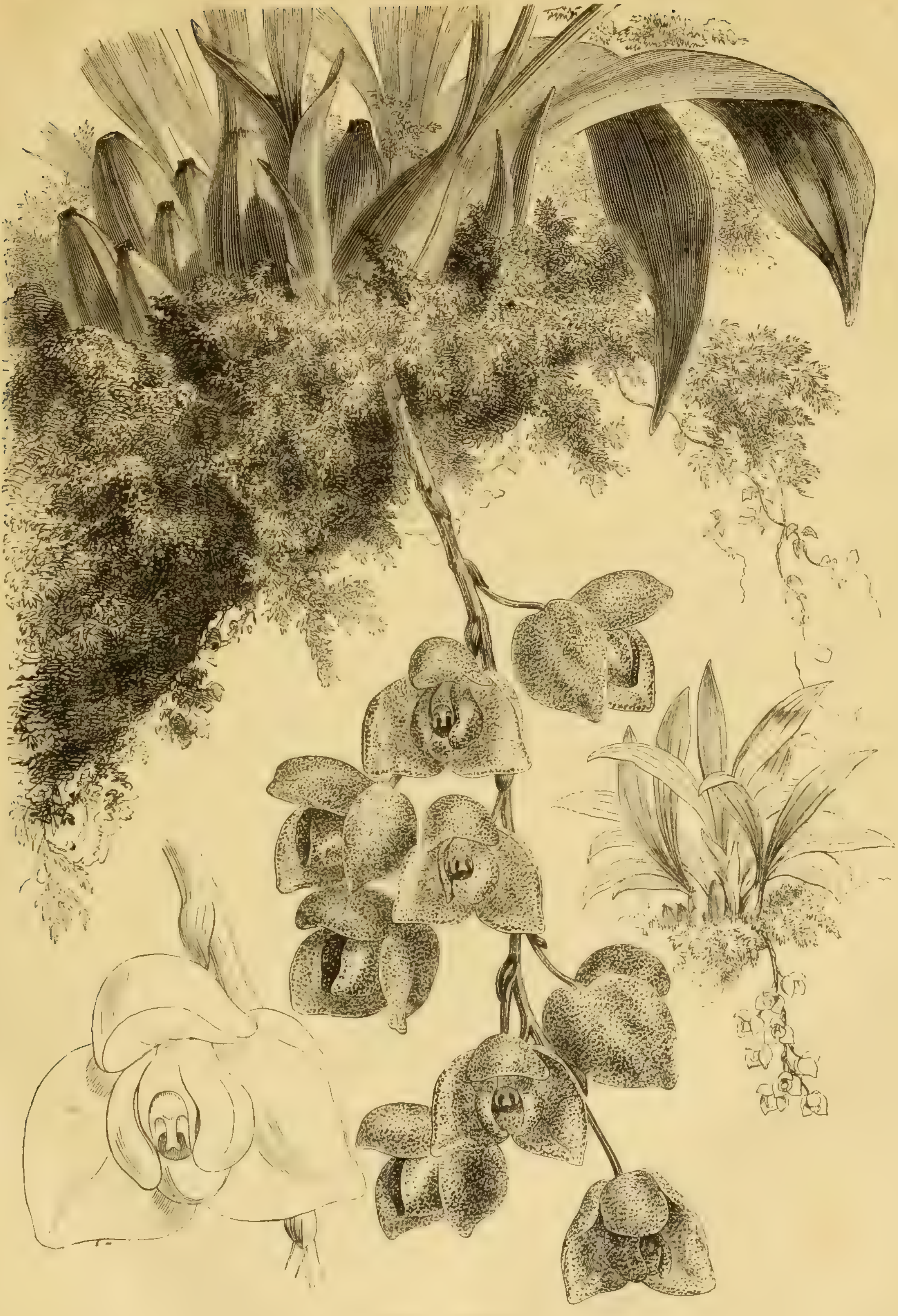
Noble Orchids are the Acinetas, all the species of which are beautiful and worthy of cultivation. They are all epiphytal and natives of tropical America. There are several species, but A. Humboldti is the one best known, and is perhaps the finest of the family. It is strong-growing, producing large angular pseudo-bulbs, and ample ribbed leaves. It was found in Venezuela, from whence it was introduced into England in 1841. It requires a tolerably high temperature to have it in perfection, and is consequently grown in the East Indian house or in the warmest part of some intermediate house; but in places where there is only one Orchid house it may be successfully cultivated in the warmest end of it. Acinetas should be grown in baskets suspended from the rafters or in baskets shaped somewhat like a wine glass, the stem of which should be an inch or two in diameter and two feet high, with the basket fixed vase-like at the summit, and resting on a base sufficiently wide to prevent the whole from being readily upset. It is absolutely necessary to employ baskets for Acinetas, as they produce their flowers on pendulous racemes from the base of the pseudo-bulbs, and push downwards like Stanhopeas through the compost until they reach the light, when they lengthen themselves sufficiently to develope all their flower buds.

The flowers of A. Humboldti are of a deep chocolate colour minutely spotted with crimson; they are thick and wax-like in substance, and commonly produced in May and June. Although in the annexed illustration only one raceme is visible, I have seen four much finer spikes all in perfection at one time on one plant. This specimen was in Mr. McLeod's collection at Dalvey, in Morayshire, and was grown in a wine glass-shaped basket or vase, made of erect, light, wooden bars 6 inches apart, and held together by copper wire. When in flower water should be carefully applied, for should it get spilt over the blooms, their beauty becomes much impaired.

A compost consisting of good turfy peat and roughly-chopped Sphagnum is well adapted for all the species of Acineta. They make their growth in spring and summer, and during that period should be liberally watered and syringed twice a-day; atmospheric humidity is likewise necessary. Throughout the winter months they should be kept pretty dry, but not too much so. A light sprinkling overhead once a week, on fine days, during their resting season, is also beneficial. They may be shifted, if necessary, in February; but generally the looser portions of the old compost are merely removed and replaced with fresh material. If it be necessary to increase the root room, a shift is given; or if increase of stock be aimed at, the plants are shaken out and divided, and the individual portions put in separate and smaller baskets. Should the wires be too far apart to retain the compost, it may be secured by means of pegs made of the common Brake. Beech pegs are frequently employed for this purpose, but I know of nothing superior to those of the Bracken, wooden pegs being productive of fungi.

The elegant sprayey drapery that clusters about the basket in the accompanying illustration consists of Selaginellas, Maiden-hair and other light graceful Ferns, and a few other stove plants that will grow anywhere. It is seldom necessary to plant these, for if the Orchids are placed in the vicinity of such plants, the exposed soil in which they are grown soon becomes furnished with self-sown seedlings. If it be requisite to accelerate the growth of such drapery, and to enhance its beauty by greater variety, the following may be inserted between the wires, viz.:—Selaginellas of the Kraussiana and Mertensi sections, and other graceful kinds not of a too robust nor of too dwarf a habit, Coccocypselum repens, Panicum variegatum, Torenia asiatica, Achimenes picta, Tradescantias—the creeping ones, and Streptocarpus Rexii, which, although not a creeper, is admirably adapted for suspended baskets. Many other little plants might be likewise advantageously utilised in this way. Amongst Ferns, the airy Adiantums, little Gymnogrammas, which, notwithstanding their farinose leaves, thrive excellently; Doodias, little Pterises, Davallias, Polypodiums, a few Aspleniums, and others.

Wm. Falconer.



ACINETA HUMBOLDTI.

ACACIAS.

Why have the numerous species of this extremely showy family almost completely gone out of cultivation? During the early spring months their flower-laden branches used to enliven our greenhouses and conservatories, and what, let me ask, have we got in their places? Absolutely nothing. They maintained their ground longest at Kew, but even there most of the grand old specimens have disappeared, and their gay flowers no longer serve to make lively the dull days during winter and early spring. Acacia Riceana, a species recently brought forward as a new plant, was amongst the last of the Kew collection that disappeared. I do heartily trust that at least all the more beautiful species of this family will soon again occupy the position which they once held in our greenhouses.

The Australian members of this genus may be easily raised either from seeds or cuttings; they should be potted in a mixture of peat, loam, and sand, in the proportion of two parts each of the two first, and one of the last. In summer, after their growth is made, they may be set in the open air, fully exposed to the sun, but at the same time they must be well supplied with water, and never allowed to suffer from drought. Some of the species have a tendency to make long straight shoots; these, therefore, should be selected for training upon rafters or pillars, on which they thrive well and form splendid ornaments in spring, whilst the more shrubby kinds will be equally at home in pots in the form of bushes. When in flower they may be used to decorate corridors or halls, but I cannot recommend their introduction into the drawing-room, except as cut-flowers, on account of a disagreeable odour which their roots emit, and which is very perceptible when confined indoors. As to colour, they are with few exceptions yellow, of some shade or other; I shall, therefore, merely give the name of a few species, which will amply repay anyone for bestowing on them a little attention, noting at the same time the periods at which they bloom.

A. Drummondii, April to June.
A. Riceana, March to June.
A. pulchella, May and June.
A. hispidissima, April and May.
A. asparagoides, May and June.
A. armata, April to June.
A. cochlearis, January to March.
A. viscidula, March to May.
A. longifolia, April and May.
A. oleæfolia, May.
A. grandis, April and May.
A. vestita, April and May.
A. taxifolia, April and May.
A. diffusa, March and April.
A. argyrophylla, March and April.
A. verticillata, April and May.
A. pubescens, April and May.
A. floribunda, May.
A. Sophoræ, April and May.
A. Latrobei, May.
A. suaveolens, April and May.
A. linifolia, April and May.
A. undulæfolia, May.
A. paradoxa, May. G.

GARDENIA FORTUNEI.

Of the many fine plants for which we are indebted to Mr. Fortune, we think that, tested by a jury of ladies, this would be pronounced the finest; for to the purity and doubleness of the white Camellia this plant adds the delicious aroma for which the whole tribe of Gardenias is so much prized. The market growers who cultivate the Gardenia by the thousand for the supply of the bouquet makers of Covent Garden grow them principally by means of the heat of fermenting materials. The general plan is to have a pit filled with spent Hops from the brewer's, or tan, for bottom heat, and then linings of stable manure around the sides of the pit. The plants in the growing season delight in a brisk, moist temperature, and that of a good hot-bed or pit is very congenial to them; but to mature the wood and set the flower buds it is necessary that they be exposed to a drier atmosphere and a free circulation of air. Cuttings of the Gardenia strike with the utmost freedom in a close, moist temperature, with some bottom heat. Though heat from fermenting material is the most suitable for the cultivation of this tribe of plants, it must not be supposed that they will not grow in an ordinary plant stove. Plants so treated we now have of G. Fortunei, G. florida, and G. florida intermedia finely set with bloom buds. During the growing season they were placed in the closest part of the stove, and were well supplied with manure water. When the growth was complete and the flower buds forming, they were exposed to full air, and for some months past they have been in a cool house with the Camellias. When we want bloom they will be removed to a forcing house, and there remain to make their growth. As a forcing plant, to come into bloom in March and afterwards, we know nothing so valuable as the Gardenia. It is a universal favourite with all who know it, and will ever remain so. The only drawback is that insect pests of every kind have a great affection for it. Mealy bug, white and brown scale, thrips, and red spider each grow fat and multiply upon it. The best remedy for these pests is to lay the plants upon their sides, and then syringe them when in a dormant state with water heated to 120 ; then follow with a dressing of Abyssinian mixture of full strength, and the visitation will be subdued, if not eradicated. The kind mostly grown for flower-market purposes is G. radicans. It is a dwarf, free blooming species, and, carefully managed, flowers most profusely. A.

NEW SUCCULENTS.

The following are in Mr. Peacock's collection at Hammersmith, and to all of them first-class certificates were awarded the other day by the Royal Horticultural Society:—

Mammillaria Peacockii.—This curious plant looks not unlike a ball of grey worsted, its spines entirely hiding the stem. It comes from Mexico.

Pilocereus Peacockii.—So named in honour of Mr. Peacock by M. Roezl, who introduced it. It is quite a distinct species, clothed with cream-coloured hairs, and spines of the same colour 1 inch long.

P. Hoppenstedta.—This is another new species, introduced by M. Roezl. It has sharp angles, and is furnished with brown and white spines, 2 inches long, forming at the apex a dense mass.

Yucca Eylesii.—A noble plant of Palm-like appearance, having a stem 8 feet high, crowned with a mass of foliage 2 feet 3 inches long, without spines or filaments. It comes from Mexico.

Agave Corderoyi.—This is one of Mr. Besserer's introductions. Its leaves are strap-shaped, a pale green in colour, and from 1½ foot to 2 feet long, and 1½ inch broad. Its spines are black, small, terminal, and an inch in length. The plant itself is compact, semicaulescent at the base; the leaves are flat, but those on the upper part are canaliculate. In short, this Agave seems to be quite distinct from any other belonging to that genus, and it does not appear to grow to a very large size. It has been named Corderoyi, in honour of Justus Corderoy, of Bleubury, Berks, by M. L. de Smit, of Ghent.

Sparmannia africana.—This is one of the many good old plants we seldom meet with now, though it is a plant of the easiest possible culture, and produces an abundance of showy white flowers during the winter and spring months, a period when flowers are most valued for bouquets and dinner-table decoration. Introduced from the Cape of Good Hope in 1790, it has remained in our gardens here and there, but it is not so well known and appreciated as it deserves, if its floriferous habit and general usefulness are considered. After its flowering season is over, it may be pruned back quite close, and grown on during the summer months for blooming again the following winter. It will grow in an ordinary greenhouse, or may be introduced with advantage into an intermediate house or plant stove. If grown on during the summer in a warm temperature it will bloom earlier in the winter months, while plants grown in a cooler temperature will come in to succeed the stove-grown ones. It is very easily propagated by cuttings, which may now be inserted, four or five in a 32-sized pot, and, if allowed to remain in the cutting pots and grown on, will make nice little plants for conservatory decoration the following winter. This plant is by some discarded as a shy bloomer, but I have invariably found that, if pruned close back and grown on freely during the summer, as recommended, an abundance of bloom has been the result. From a botanical point of view the plant is remarkable as having irritable stamens; more especially is this peculiarity shown during bright sunshine, the stamens gradually diverging with great regularity on their being touched with the finger or any other body.—A. P.

Eucharis amazonica.—Nothing can exceed this in beauty as a winter-flowering plant. We have now in the gardens at Rendlesham Hall fine plants of it in 10-inch pots, with seventy-two flower spikes on them.—J. Mill.

Palm Seeds.—How am I to treat seeds of Seaforthia elegans gathered in 1871?—Beta. [Seeds of Seaforthia elegans may be sown at any time. It as old as you say, they should be tested; if the embryo is plump all is right: plunge the pots containing them in a bottom heat of 80°.—J. C.]

SOLUTION TO GARDEN ACROSTIC, No. 1.

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THE FRUIT GARDEN.

DESSERT ORANGE CULTURE.

BY THOMAS RIVERS, SAWBRIDGEWORTH.

In the diary of that "fine old English gentleman," John Evelyn, may be found an intimation to the effect that he had eaten as good "China Oranges" plucked from his own trees as he ever wished to eat. In those days dessert Oranges were, it seems, called "China Oranges." Although Oranges were cultivated in France long before Evelyn's time, yet they were considered merely ornamental appendages to palaces and mansions; no thought seems to have been turned to them, so as to consider them fruit trees; and even Evelyn, with his remarkable horticultural sagacity, does not mention that he had ranked Orange trees among fruit trees; for in his "Kalendarium Hortense," when he mentions for every month "fruits in prime and yet lasting," no mention is made of Oranges; it would seem, therefore, that his gathering of Oranges fit to eat was an accidental occurrence, and we are led to suppose from the silence of gardeners for nearly two hundred years as to their culture, that the Orange-eating world has felt perfectly satisfied with imported Oranges, brought quickly by fast-sailing vessels; still, the difference between Oranges freshly gathered from the trees, and the very finest imported, is most remarkable; there is a crispness and fine aroma in Oranges freshly gathered difficult to realise, unless they are promptly compared with imported fruit; they are indeed a luxury, and, as such, will be cultivated ere long in every good garden.

The houses best adapted for their cultivation are the large span-roofed, 24 feet wide, 6 feet high at each side, and 15 feet high in the centre. A house of this size will require eight four-inch hot-water pipes, four on each side; artificial heat is required all the year to ripen Oranges in one season perfectly. A smaller span-roofed house, 5½ feet high at each side, and 12 feet high in the centre, heated by four four-inch hot-water pipes, two on each side, is almost as eligible for Orange culture as one even of the larger size. A house of these dimensions, with a central path, and a border on each side planted with Orange trees, would form a pleasant and productive Orange garden; but to form an Orange grove, so as to have trees of fine growth, and to give abundant crops, the larger house must be resorted to. From the experience I have gained, I firmly believe that no conservatory, no Orchid house, no greenhouse, is half so beautiful or interesting as an Orange-house constructed on the principles I now advocate, and provided with fixed roofs, rafters 24 inches apart, glazed with a large piece of glass, and admitting abundance of light; so that in December, when the trees are covered with their golden fruit, and many of them showing their snowy-white perfumed flowers, the scene is, indeed, enchanting, and is enhanced by the agreeable temperature, which need not be higher than from 50° to 60° (10° to 15° Cent.) in cloudy weather. It is not fierce heat in winter that ripening Oranges require, but an even, agreeable temperature, such as is experienced in the Azores during that season of the year. The houses above mentioned should have side ventilation, as in orchard-houses, viz., an opening in each side of the large house 2 feet wide, for the smaller houses 1 foot wide; these openings should be in the centre of each side, and shutters of wood or sashes employed to close them, the latter, of course, being the most agreeable. In houses thus treated, Orange trees may be cultivated in pots or tubs, or planted in the borders. There is no doubt that more rapid growth would take place if such borders were heated by having hot-water pipes placed 2 feet under the surface; but from recent experience I am inclined to think this is not absolutely necessary, for if the borders are raised 18 inches above the surface, they would have sufficient heat from the atmosphere of the house, and their temperature would be quite equal to sustain the trees in health.

The cultivation of dessert Orange trees in pots or tubs is very simple; the compost they require consists of equal parts of peat, loam, and manure thoroughly decomposed; the two former should not be sifted, but chopped up with the pieces of turf and roots, so as to form a rough compost. The trees will grow in this freely, and bear abundantly; but they should have gentle, constant, root heat; this is best given by enclosing hot-water pipes in a shallow chamber of bricks, and placing the pots on a flooring of slates or tiles forming the roof of the chamber. The compost for the borders in which Orange trees are to be planted should consist of turfy loam two parts, and equal parts of thoroughly decomposed manure and leaf-mould. After planting, the borders should be trodden down firmly, as Orange trees seem to flourish best in firm loamy soils. In the Orange gardens of Nervi, where Orange trees are, or used to be, so largely grown for exportation, and imported by the London dealers in oil, &c., the soil is a tenacious yellow loam. The best form of tree for an Orange garden under glass is the round-headed, a form which it seems to take naturally; for if it is endeavoured to be cultivated as a pyramid, which would seem desirable, its lower branches soon become weakly and unhealthy. If trees with stems 2 or 3 feet in height are planted, the lower branches may be gradually removed till a clear stem of 5 feet in height is formed, and this height will be found sufficient. They may be planted from 5 or 6 to 7 feet apart, according to the size of the house, and the room which can be afforded for each tree. It must not be forgotten that in small houses the heads of the trees may be kept in a compact state by summer pinching, and in large houses be allowed a greater freedom of growth, so that the owner of an Orange garden in England may sit under the shade of his Orange trees. No one but an amateur of gardening can imagine the pure, quiet pleasure of taking a morning walk in the Orange house, during the above-mentioned dreary months, and plucking from the trees Oranges fully ripe. I have had much experience in the culture, and I may add, in the eating of fruit; but I can say with a firm conviction that I have never enjoyed any kind of fruit so much, as I have Oranges of my own plucking in winter.

SORTS.

There are but few kinds yet known of really fine dessert Oranges; the amateur who wishes to plant an Orange garden to supply his dessert, must not think of planting the most numerous varieties of the genus Citrus grown by Italian and French cultivators; they are mostly what are called fancy sorts, and are more prized for their foliage and flowers than for their fruit. One of the most charming and prolific of dessert Oranges is the Tangierine; the tree has small leaves, and seldom attains a height of more than 7 feet, even in North Africa. Its most valuable quality is its early ripening, so that in October, just as the late Peaches and other soft fruits are over, this luscious little fruit is ready for the dessert; and when freshly gathered no fruit can be more gratifying or delightful, as its aroma is so delicious, and its juice so abundant; in this respect offering a pleasing contrast to those imported from Lisbon in November and December, the flesh of which is generally shrunk from the rind, instead of being ready to burst, as is the case with those plucked from the tree. They should, in common with all home-grown Oranges, be placed on the table with some leaves adhering to their stalks, thus showing that they have not made a voyage. Among full-sized Oranges the Maltese Blood takes the first rank; when quite fresh from the tree it differs much from those imported, although the voyage as now made by steamers is of short duration. I was not so fully aware of this till early in January, 1866, when I was able to compare some fine imported fruit with some gathered from my trees. I found the former, although rich and juicy, yet flat in flavour compared with those freshly gathered; they lacked the crispness and aroma which were most agreeable in the latter. The great advantage in planting this sort is its tendency to bear fine fruit while the trees are young; they are indeed so prolific that trees of only 2 feet in height have here borne nice crops of fruit. Some varieties, quite equal to the foregoing in quality, but without the red flesh, so peculiar to these "blood Oranges," have been imported from the Azores, the paradise of Orange trees. One of the most desirable sorts is called simply the St. Michael's Orange. This kind has a thin rind, is very juicy, and bears abundantly, even while the trees are young. In the Orange house, these will ripen towards the end of December, and throughout January and February, in common with the Maltese blood Oranges. In addition to the three leading varieties I have mentioned, there are several kinds which will, doubtless, prove interesting and valuable. It is not to be expected that so much variation in flavour, as in the Pear, for instance, can be met with in Oranges. I believe, however, that when our Orange palates are educated we shall find many delicate distinctions in the flavour of Oranges. As far as I have gone I have found the Mandarin Orange larger and more flat in shape than the Tangierine, and not so good as that sort. The Embiguo, the Egg, the Silver Orange, the Botelha, the White Orange, and some others, all varieties from the Azores, are of various degrees of excellence, and are all worthy of a place in an English Orange garden. It may be added that the Lemon, more particularly the Imperial Lemon, is well worthy of a place in the Orange garden, as is also the small Lime, which is a concentration of acidity.

The Oranges this season (1872) at Sawbridgeworth are particularly fine and rich; there is also an abundant crop, the sight of which is most gratifying.

EARLY FRUITING OF PINES.

I agree in the main with the remarks of your correspondent Mr. J. Groom (page 524, vol. ii.), but I must state that the fruiting of Pines, yes, and the ripening of them too, within twelve months of their being taken from the parent plant, is not an isolated circumstance, but an established fact repeatedly accomplished. Special means must, however, be used to attain this end. The suckers, before being taken from the parent plant, must be in every respect strong and well matured. They must be potted in 7 or 8-inch pots containing sound friable turf, and subjected to a bottom heat of from 85° to 90°, with a proportionally cool atmosphere; they must also be slightly shaded for a few days from bright sunshine. They quickly become established and should be immediately transferred to their fruiting pots and encouraged by a genial atmosphere, as it is important they should have as little check as possible. If they do not "show" at the expected time, both temperatures just given may be lowered and water withheld for a week or two, care being taken not to carry out these restrictive measures so as to materially affect the health of the plant, and by again resorting to a suitable temperature fruiting is almost certain to be induced. Much the same measures as these used to be carried out in the Hamiltonian system of Pine growing, except that the old plants were planted out and two suckers generally left upon each, instead of being detached, and they were encouraged by earthing up after the fruit was cut; thus they fruited and ripened, as a rule, within twelve months from the time the first fruit was cut. Such extreme precocity with regard to the fruiting of the Pine-apple is not, however, to be attained by any other means than by extra strength and maturity of the suckers. And if the latter can be nursed for a couple of months upon the old stools after the fruit is cut, there is a decided gain. In the case of vigorous young plants, when the suckers have been confined to one or two upon each plant, it is astonishing the progress made in a genial atmosphere.

I had a bed of Pines that fruited in summer and ripened fruit of excellent quality, the whole being ripened and cut within sixteen months of the time when the suckers were put in; and I have had also smooth Cayennes and Queens which ripened their fruit within the twelve months; several of the Cayennes weighing over nine pounds.

An important point in this matter is that young Pines invariably produce the finest and most perfect fruit. I look upon it as a general rule, that Pines should be induced to start into fruit from twelve to eighteen months from the time the suckers are put in. If this is accomplished there need be no cause for complaint. When they exceed that period without showing, however strong in appearance the plants may appear, they rarely produce fine fruit, and it is better to adopt measures to induce fruitfulness by repotting into fresh soil than to leave them longer under the same conditions.

Witley Court, Worcestershire. Geo. Westland.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Oranges.—The Orange trade of London is assuming vast proportions. The following are the estimated quantities imported into London last season from the several places of growth: Valencia, 184,000 boxes; St. Michael's, 120,000; Lisbon, 65,000; Sicily, 27,000; Terceira, 28,000; Simla, 27,000; and other districts, 12,000—in all 453,000 boxes. The contents of a box average 500 Oranges: consequently the total supply of the metropolis was 225 millions.

Imported Bananas.—Bananas are about the costliest green fruit now imported. They are brought from the West Indies in vessels specially fitted for their transport. Bunches of from 50 lbs. to 100 lbs., as taken from the tree, are suspended on hooks in the hold or in cabins allotted to their conveyance. They arrive quite fresh-looking at Covent Garden, and will keep for weeks if guarded against pressure. Ten years ago, when first introduced, they cost the dealers about ten shillings a bunch, but the same quantity now costs twenty shillings. They are retailed by the dozen at from three to five shillings.

THE HOLME, REGENT'S PARK.

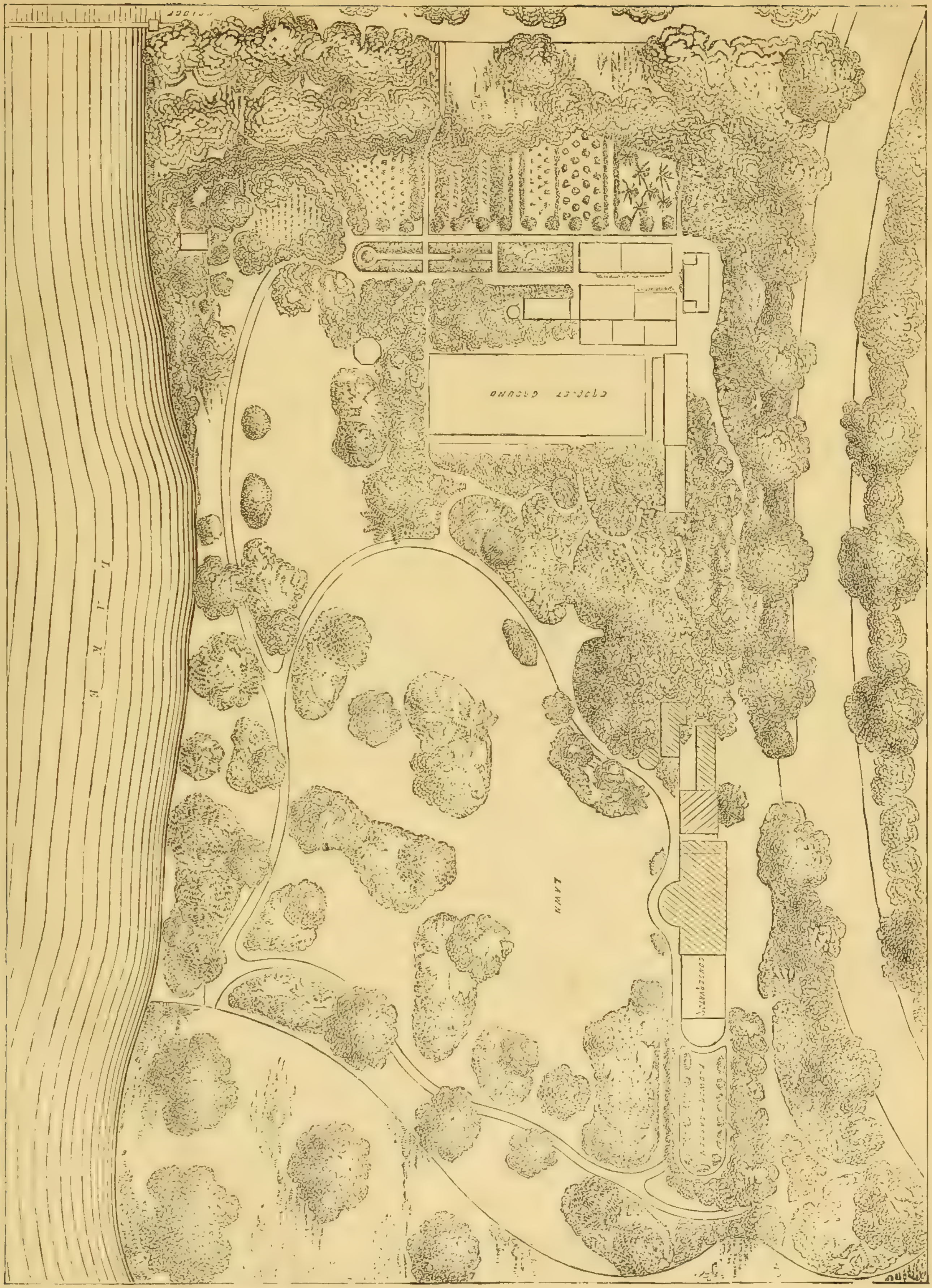
We give this week a plan of one of the prettiest small gardens with which we are acquainted. It lies between the ornamental water in the Regent's Park and the Inner Circle. The views from the lawn and the house are so managed that the water and park scenery seem part of the place, and the views are charming. The place illustrates some good points in garden design. The kitchen garden frames, houses, &c., are, for example, well concealed. The small flower garden, the effect of which is very simple and pretty in spring or summer, is also tastefully cut off, and the lawn on the lake side of the house is free and open, permitting of easy movement, affording pretty views to many parts of the park, while it is gracefully adorned with trees and shrubs.

The mansion is situated in about the centre of the grounds, on a slight eminence, and commands a very pretty view of the Park, the hills of Hampstead and Highgate, and the surrounding country. Adjoining the south wing of the house there is a neat metal conservatory. Leaving the flower garden, the next feature of interest is the rock garden, which, though very small, is so admirably intersected by walks and high banks covered with various rock plants (among which are some very choice Ferns), as to lead a stranger to imagine it is of considerable extent. The rock-work is the most natural of any we know in the neighbourhood of London, and with its Brambles in wild luxuriance, and various wild plants, one might almost consider it as in the Peak of Derbyshire, or among natural rock scenery. From the rock-work, we proceed through a stalactite cavern, with its coloured light and waterfall, until we come to a door glazed with pale lemon-coloured glass, through which we perceive the Orchid-house, which is also a rock-work arrangement, and which one might almost fancy to be a natural cavern, the top of which had been taken off, and a glass roof substituted. Some of the Orchids are growing beautifully on the rock-work, and the Ferns are quite at home in such a situation. This garden is at all times well kept, and in very neat condition, under the management of Mr. Stone, the rocky fernery being particularly chaste and natural.

THE FLOWER GARDEN.

THE MIXED SHRUBBERY BORDER.

No practice is more general, or more in accordance with ancient custom, than that of digging shrubbery borders, and there is none in the whole course of gardening more profitless or worse. When winter is once come, almost every gardener, although animated with the best intentions, simply prepares to make war upon the roots of everything in his shrubbery border. The generally accepted practice is to trim, and often to mutilate, the shrubs, and to dig all over the surface that must be full of feeding roots. Delicate half-rooted shrubs are often disturbed; herbaceous plants, if at all delicate and not easily recognised, are destroyed; bulbs are often displaced and injured; and a sparse depopulated aspect is given to the margins, while the only "improvement" that is effected by the process is the annual darkening of the surface by the upturned earth. Walk through gardens in winter and spring, and observe the borders round masses of shrubs, choice and otherwise. Instead of finding the earth covered, or nearly covered, with vegetation close to the margin, and each individual developed into something like a respectable specimen of its kind, we find a spread of recently dug ground, and the plants upon it with an air of having recently suffered from a whirlwind, or something or other that necessitated the removal of mutilated branches. Rough-pruners precede the diggers, and bravely trim in the shrubs for them, so that nothing may be in the way; and then come the delvers, who sweep along from margin to margin, plunging deeply round and about plants, shrubs, or trees. The first shower that occurs after this digging exposes a whole network of torn-up roots. There is no relief to the spectacle; the same thing occurs everywhere—in a London botanic garden as well as in our large West-end parks; and year after year the process is repeated. While such is the case, it will be impossible to have an agreeable or interesting margin to a shrubbery; albeit the



PLAN OF THE HOLME GARDENS, REGENT'S PARK.

importance of the edge, as compared to the hidden parts, is pretty much as that of the face to the back of a mirror. Of course all the labour required to produce this unhappy result is worse than thrown away, as the shrubberies would do better if left alone, and merely surface-cleaned now and then. By utilising the power thus wasted, we might highly beautify the positions now so very objectionable.

If we resolve that no annual manuring or digging is to be permitted, nobody will grudge a thorough preparation at first. The planting should be so arranged as to defeat the digger. To graduate the vegetation from the taller subjects behind to the very margin of the grass is of much importance, and this can only be done by the greater use of permanent evergreen and very dwarf subjects. Happily, there are quite enough of these to be had suitable for every soil. On light, moist, peaty, or sandy soils, where such things as the sweet-scented Daphne Cneorum would spread forth their dwarf cushions, a better result would ensue than, say on a stiff clay; but for every position suitable plants might be found. Look, for example, at what we could do with the dwarf green Iberises, Helianthemums, Aubrietias, Arabises, Alyssums, dwarf shrubs, and little conifers like the creeping Cedar (Juniperus squamata), and the tamarix-leaved Juniper! All these are green, and would spread out into dense wide cushions, covering the margin, rising but little above the grass, and helping to cut off the formal line which usually divides margin and border. Behind them we might use very dwarf shrubs, deciduous or evergreen, in endless variety; and of course the margin should be varied also.

In one spot we might have a wide-spreading tuft of the prostrate Savin pushing its graceful evergreen branchlets out over the grass; in another the dwarf little Cotoneasters might be allowed to form the front rank, relieved in their turn by pegged-down Roses; and so on without end. Herbaceous plants, that die down in winter and leave the ground bare afterwards, should not be assigned any important position near the front. Evergreen Alpine plants and shrubs are perfectly suitable. But the true herbaceous type, and the larger bulbs, like Lilies, should be "stolen in" between spreading shrubs rather than allowed to monopolise the ground. By so placing them, we should not only secure a far more satisfactory general effect, but highly improve the aspect of the herbaceous plants themselves. The head of a white Lily, seen peeping up between shrubs of fresh and glistening green, is infinitely more attractive than when forming one of a large batch of its own or allied kinds, or associated with a mass of herbaceous plants. Of course, to carry out such planting properly, a little more time at first and a great deal more taste than are now employed would be required; but what a difference in the result! In the kind of borders I advocate, nearly all the trouble would be over with the first planting, and labour and skill could be successively devoted to other parts of the place. All the covered borders would require would be an occasional weeding or thinning, &c., and perhaps, in the case of the more select spots, a little top-dressing with fine soil. Here and there, between and amongst the plants, such things as Forget-me-nots and Violets, Snowdrops and Primroses, might be scattered about, so as to lend the borders a floral interest, even at the dullest seasons; and thus we should be delivered from digging and dreariness, and see our ugly borders alive with exquisite plants.

Assuming that one did not sufficiently esteem hardy flowers to go even to the trouble of adapting the margin of a shrubbery to them, it may not be amiss to point out that the beds of Rhododendrons and American plants generally offer the finest positions that can be desired for the making of the most charming and satisfactory kind of mixed borders. The culture of Rhododendrons has for many years been so popular in this country that there are few places that do not possess beds or masses of them, or in which fertile masses of peaty soil have not been gathered for their reception. The Rhododendron bush, however fine in flower, has at all times a flattish, formal outline, and this is often disagreeably apparent where large masses are planted, as is now the custom in many places. The soil suited to the Rhododendron is also perfectly suited to the most beautiful and fastidious of all fine perennials. The bold and tall heads of Lilies standing above the flat green of the Rhododendrons in summer, sometimes, as in L. tigrinum Fortunei and L. superbum, in magnificent candelabra-like heads, are the very things to relieve these masses in the most effective way. Then again, the Lilies themselves will be seen to much greater advantage; the bases of their stems, being hidden by their surroundings when withering, will not be an eyesore, as they often are when in a border, so that an impatient gardener might want to cut them down before their time, or have something else in their place. The very open spaces which long remain between Rhododendrons, &c., in consequence of their somewhat compact and slow-growing habit, encourage the kind of arrangement suggested. It would be desirable to treat various classes of plants in this way, as, for instance, the Lilies, the Gladioli, Sparaxis pulcherrima, Tritomas, Crocosmia aurea, &c., none of which need be disturbed after being planted, though tall and graceful subjects are undoubtedly best suited for it. But even round the edge such comparatively dwarf subjects as the Solomon's Seal and the beautiful Lilium longiflorum might be placed with the happiest results. In the case of some of the American Lilies, like L. superbum, this plan is not merely a good one for growing the plants, but it is better than any hitherto pursued with them, the peat soil and the partial shelter enabling them to attain their true dimensions and highest beauty, whereas as commonly grown they are starved, and rarely bloom. Another advantage of this mode is the succession of bloom from the same surface. As a rule, once the blush of early summer bloom has passed from the American plants, they present an uninviting surface for the season afterwards; whereas varied in the way described the beds would be most attractive at other seasons. R.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

The Best Twelve Tea Roses.—I shall be greatly obliged if you or any of your readers will name for me the best dozen kinds of Tea Roses.—R. [The following are the best, we think:—Devoniensis, Maréchal Niel, Gloire de Dijon, Souvenir d'un Ami, Souvenir d'Elise, Madame Willermoz, Triomphe de Rennes, Niphetos, Céline Forestier, Madame Margottin, Belle Lyonnaise, Adam.]

Schizostylis coccinea.—I can fully endorse all that has been said as to the value of this plant. I have cut flowers from it for more than a month, and shall still cut more. It is an excellent plant for cut flowers, as they come out so well and last so long in winter. With the addition of Christmas Roses, Jasminum nudiflorum, and Garrya elliptica, we can still get a good nosegay from the outside garden. But with all this in its favour, the Schizostylis is a very capricious plant. I have had it for many years, but, as a general rule, it is a very shy bloomer. Probably the wet summer has suited it well.—H. N. Ellacombe, *Bitton Vicarage.*

THE KITCHEN GARDEN.

PARIS MARKET VEGETABLES AND THEIR CULTURE.

BY A PARIS MARKET GARDENER.

(*Continued from p. 555.*)

LETTUCE.

Rabelais, curé of Meudon, is said to have sent to the Cardinal d'Estrées in 1540 seeds of the first Lettuces grown in France. The plant was at that time extensively grown and used as salad in Italy. The two principal kinds in cultivation are the Cabbage Lettuce and the Cos or Roman. Of the former the following varieties are grown:—The black, the Gotte, the George's, the Palatine, the red, the grey, the *de la Passion*, and the *laitue à couper*. Of the Cos there are three popular varieties, the green, the white, and the grey.

CABBAGE LETTUCES.

The black Lettuce or Laitue Noir, which is the earliest of the spring crops, and which derives its name from the colour of its seed, is sown about the end of September under cloches, from which the air is excluded. Successive sowings are made up to the 12th of October or later. The seedlings are transplanted under cloches, twenty or thirty plants to each cloche, on sloping beds facing the south and covered with a good layer of fine rotten manure. Three rows of cloches are placed on each bed, and the plants are pricked in with the finger. No air is given unless the weather is very mild, and the plants appear likely to run to seed. Air is admitted by raising one side of the cloche and resting it upon one of the notches in the side of a prop similar to that used for the frames, except that the lower part is cut to a point and is driven into the ground. The seedlings are planted out in moderately warm beds which have been prepared in the beginning of November. Forty-five or forty-six plants are placed in each bed, and no other seed is sown amongst them. At the same time some good hot-beds for Carrots are prepared, in each of which from thirty to thirty-six Lettuces are planted quincunx-fashion. These plantings are continued from month to month up to the 1st of February, always in hot-beds under frames, with sowings of Carrots, Spinach, or Radishes. In January and February also three plants of Cabbage Lettuce and one of Roman Lettuce are planted under each cloche among sowings of Carrots. The varieties George's and Gotte are sown from the 4th to the 10th of October under cloches like the black Lettuce; they are transplanted in the same way, but they must have plenty of air. Lettuces grown in cool beds are planted out in December, thirty plants under each light, among sowings of Parsley, Sorrel, Parsnips, or dwarf Celery. Four Cauliflowers may be interplanted under each light in February. When there is no frost air should be given to Lettuces in cool beds. They need not be covered except during unusually severe frost, and those which which have been planted out in January need not be covered at all. Before planting out, the sowings should be covered with a good layer of rotten manure, and manure should also be placed on the walks, so that the soil may not be too much trampled. If planted out under cloches, three or four plants to each cloche will be sufficient; there might be three Cabbage Lettuces and one Roman in the middle. There should be three rows of cloches thus furnished on each bed. The red, grey, and Palatine Lettuces are sown under cloches from the 16th to the 20th of October, and are transplanted like the others. They are planted out under cloches, or on sloping beds or open squares in March, among sowings of any kind. The plants are set quincunx fashion, at intervals of 10 or 12 inches from each other. In the open ground they are sown from the month of March till September. The variety called De Passion is not grown by market gardeners: it occupies the ground for too long a time. It may be sown in nursery beds from the 15th of August to the 15th of September, and planted out in November in a warm position. It is hardy and does not suffer from the frost; nevertheless, it is as well to cover it with mats or litter when the weather is very severe. The variety named *à couper* is sown broadcast, and rather thin among the rows of Cabbages, or in spaces in which Melons are to be grown in May. Later on, it is sown instead of Corn Salad among the white Onions. In the same way, about the end of August, may be sown black Lettuces, George's, and Gotte, which in the end of September are to be planted out under cloches, six plants to each cloche; or under frames, thirty-five or forty plants to each light. They may be gathered in November and December. They should be sheltered from the frost by covering the frames or cloches with mats.

ROMAN LETTUCES.

Sowings of green Cos Lettuces commence from the 1st to the 10th of October, under cloches, and the seedlings are transplanted like those of other Lettuces, with this difference, that Cos Lettuces sown on hotbeds are transplanted at the rate of from seven to fourteen seedlings to each cloche. Cos Lettuces may also be sown under frames, but the cloches are more generally used. The operations commence in December. The dung-beds should be made rather warm, and beds of warm manure should form the walks. Only one plant should be placed under each cloche, and great care should be taken to guard against frost. In January and February this mode may be employed with greater safety. Three rows of cloches are placed on each bed, with a distance from each other of 2 or 3 inches. One green Cos Lettuce and three black-seeded ones may be placed under each cloche, with a sowing of Carrots; or one Cos Lettuce and a sowing of Radishes. No air should be given to Cos Lettuces thus planted. Cos Lettuces are planted in cold beds in the same way as George's Lettuces, and transplanted under cloches to the number of nineteen to twenty-four under each cloche. Sowings are made from the 4th to the 10th of October. The seedlings are transplanted under frames, twenty to each light, in quincunx fashion, associated with sowings of any kind, and under each light four Cauliflowers may be interplanted. If cloches are used, three plants are placed under each cloche. The light-yellow (*blondes*) and grey Lettuces are sown under cloches from the 15th of October to the 1st of November, and are transplanted in the proportion of thirty to each cloche. In March they are planted out in the open squares. They may also be placed in the sloping beds, but the green Cos is preferable there, because it is earlier. Other sowings of *blond* and grey Roman Lettuces are made from the month of March up to August. Crops of black-seeded Lettuce are gathered in January, February, and March, and then come in successively the George's, the Gotte, and the De Passion, the red-seeded, the grey, and finally, in November and December, the black-seeded or the George's. The small *au couteau* Lettuces may be gathered all the year round, being protected, of course, in winter by a covering of some kind. The earliest Cos Lettuces are gathered in January, February, and March; these are the green variety raised in hot-beds. After this time and throughout the whole summer successive crops may be gathered from cold beds. We may have them even in October and November by planting them under frames or cloches.

TREATMENT FOR ALL KINDS OF LETTUCES DURING WINTER.

We have said that all kinds of Lettuces are sown and transplanted on sloping trenched beds, and under cloches. The black-seeded variety and the Cos, when grown in hotbeds, should get no air; but all the other kinds should have air given them, except in case of frost. The green Cos should be taken up in November, and planted deeply, to protect it from the frost. Before it is taken up, and after it is planted again, air should be given, otherwise it will contract the disease called the *meunier*, and perish. Twenty-four plants are set under each cloche; but if a second transplanting is made, with nineteen plants under each cloche, the plants will be much finer. In December a ridge of manure should be placed behind the sloping beds, which will shelter the upper row of cloches when the frost comes. When the cold is severe, the air must be excluded, and mats spread over them. Should the cold continue, and the temperature descend very low, dry manure should be placed between the cloches, and if the temperature sinks still lower, they should be entirely covered with it. As long as the sun is up, the top is left exposed, in order to admit light to the plant, but as soon as his rays cease to fall on the cloches, mats should be spread over them. This protecting manure is removed when the frosts disappear, but it is kept in heaps in the walks (*sentiers*) within reach for some time, to be reapplied in case of a return of frost. Sloping beds of 7 feet to $7\frac{1}{2}$ feet wide will be found the most convenient in this kind of culture.

(To be continued.)

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Wintering Carrots.—We take up and store Carrots in winter as a matter of course; but it should also be known that (in dry situations particularly) they may be left in the ground all winter, if protected in severe weather with dry leaves or Fern. Kept in this way Carrots are much better flavoured than when housed. In storing Carrots it is not an uncommon, though an ignorant practice, to stack them in large heaps, and the consequence is quick fermentation and destruction. They should be stored in thin ridges among dry soil or sand. A shed is the best place, and in this they should be kept as dry and as cool as possible.—J. S.

The Egg Plant.—This is a favourite vegetable in America, where it grows to a good size, and is cultivated much as the Vegetable Marrow is here, that is, it is raised in heat and grown in the open air. It might be worth trying here, even though a Cucumber frame should be needed to make it grow. The purple sort is the best for kitchen use. In cooking it, take a middle-sized fruit (about 4 or 5 inches across) and cut it in slices about a $\frac{1}{4}$ inch thick; lay them on a plate and sprinkle salt between each layer, then turn a plate above them and place a weight on the top, to draw out the juice. Then wipe each piece with a cloth, egg and bread-crumb them, and fry them in boiling lard or good dripping, on both sides a light brown. A little Parsley may be fried along with them for garnishing. Serve hot.—M. W.

ON one occasion the Bishop of B—, in Scotland, was entertaining his choir at his private residence. After dinner, cheese, and amongst other things, Lettuces followed, and the Bishop handed a dish of the latter to one of his young guests, who after looking at it some time said, "Na, na, my Lord, thank you; I like my Kail (Cabbage) boiled."

THE GARDEN IN THE HOUSE.

THE VARIEGATED JAVANESE SCREW PINE.

(PANDANUS JAVANICUS VARIEGATUS).

Where room can be afforded this is well worth cultivation. A finely grown specimen of it well furnished with its prettily variegated pendant leaves is highly attractive; but it should never be too much crowded, for if it cannot stand quite clear of other plants, half its beauty is lost, a remark which also holds good in reference to all plants of similar habit. Their greatest charm lies in their finely-arched drooping leaves, which, to be seen to advantage, must stand clear of everything near them. This Pandanus is very attractive, even in a small state, but it is only when it acquires a size of some 4 feet through, and as much high, that it is seen in proper character. It is of easy culture; a small healthy plant of it in, say a 6-inch pot, if potted in February or March, into a 10 or 12-inch pot, well drained, using good turfy loam, with the addition of one-sixth of clean sand, making the soil quite firm in potting, will make a nice half-specimen in a year. It requires ordinary stove treatment, with a night temperature of from 70° to 75° during the growing season, and a rise of 10° in the daytime. Keep the soil moderately moist, syringe the plant in the afternoons, and keep it well elevated near the glass, in order to induce a short compact growth; shading very little, as when much shaded it does not come so finely variegated. It is not very liable to the attacks of insects, except scale or mealy bug, both of which must be kept down by a diligent use of the sponge and camel's-hair brush. In the winter keep the soil a little drier than in summer, and maintain a night temperature not lower than 60°. Small plants may be used for table decoration, or in a larger state for vases, but they must not be kept long out of heat, or they will suffer. Suckers taken off and inserted in small pots, using half sand and loam, and keeping them moderately close, soon root, after which they should be treated as recommended for larger plants.

T. Baines.

Variegated Screw Pine.

Helichrysum Buds.—Wishing this year not to lose even the unexpanded buds of these "everlastings," some of them were brought into the dining-room. On removing them, I thought I perceived a partial separation of the petals, and it occurred to me that this must be due to the artificial temperature of the room. I immediately tested the matter by placing a number of buds before the fire, and as a result obtained as many full-blown flowers. Knowing, however, the tendency of the Helichrysum to close after it has been in bloom, I was not satisfied with the experiment until I had ascertained that a night's exposure in the coldest room of the house failed to cause them to close.

Common Hart's-tongue.—Of this Fern, which may be found on shady banks almost everywhere, I gathered some specimens the other day in the Isle of Wight. I potted them, watered them, and placed them in the window of my sitting-room, and now they are so interesting and beautiful that I would advise all who wish to have something green in their windows at this dull time of year, to uproot a plant or two of this Fern from the nearest hedgerow, and treat it as I have done.—R.

PUBLIC GARDENS.

THAMES SCENERY.

It is probable that when every place of any natural beauty in the neighbourhood of London has been made irretrievably ugly Londoners will wake to a sense of the advantages they have lost, and of their own folly in letting them slip so lightly. Every year sees the city grow larger. Even young men can remember when a good deal which could fairly be called country was within reach of an afternoon's walk. Now, nothing of the kind can be reached except by railway, and there is no saying how far it will soon be necessary to travel, even by railway, before feeling that London has been left behind. Still, here and there accident or care has defended some special spots against the irrepressible advance of brick and mortar. They, too, may any day share the fate of the rest, but as yet they are unharmed. It is for Londoners to see that they remain so. They had need to be active now if they would save Hampton Court from the ruin which has overtaken so much else along the river bank. The Chelsea Waterworks Company intend, it appears, to ask Parliament for powers to build reservoirs along the right bank of the Thames which will extend from the mouth of the river Mole to the Swan Inn. To discover what these reservoirs will be like, we need only go a mile lower down the stream and see how Kingston has been spoiled by a similar process. In the case of Hampton Court the destruction will be much more complete. At Kingston the spectator is on the same side of the river as the Waterworks, and though the foreground has been made hideous by their agency, the view of the woods on the other bank remains. But at Hampton Court, the spectator, standing at the river end of the terrace, looks across to a line of Willows and trees, and if this is displaced by a long embankment of earth or granite, one of the chief beauties of the Palace gardens will disappear, and an element of positive and obtrusive ugliness take its place. Fortunately the Chelsea Waterworks Company has to get fresh powers before anything can be done, but we know how bills of this sort are smuggled through Parliament when it is nobody's because it is everybody's business to oppose them. At this part of its course the Thames is not rich in landscape. After Twickenham is past there is scarcely anything that tempts the oarsman to linger until he comes to Thames Ditton, and above Hampton Court he must go nearly to Windsor before he meets with any second temptation. Above the tidal stream, therefore, the mile or so between Thames Ditton and Hampton Court is the one really beautiful reach within an easy distance of London—the solitary representative of the glories which come so thickly when Maidenhead Bridge is once past. If this is destroyed—and to embank one side of the river between these two points is to destroy it—the Thames above Teddington Lock will virtually be closed to Londoners who are not prepared to journey five-and-twenty miles in search of it.

THE THAMES EMBANKMENT GARDENS.

The following is part of a leading article in the *Building News*. We by no means agree with all the conclusions of the writer, but think it desirable, in the interest of public gardening, that intelligent criticism should have free play:—"The humours of a retired merchant who, at Peckham Rye, Camberwell, or Denmark Hill, plants his Cabbages, and sets up for a man of taste, do not concern the public. His house, land, and everything that is his, are his own to use at his pleasure. The Thames Embankment does not stand in a similar case. The Metropolitan Board of Works are trustees of the public, who pay the piper, and have a right to the full value of the money they pay. Can any one who has seen the so-called ornamental grounds call them worthy of the metropolis, or worth the money they cost? The great mistake in the treatment of the reclaimed ground lay in ignoring its surroundings. Manifestly on made ground, with the lines of buildings never to be entirely shut out, and the water-level at hand to tell the tale like a philosophical instrument, the devisers have proceeded as though they had to deal with a suburban plot on a hill-side. Artificial mounds have been put up, sinuosities of path have been affected, borders of flowers skirt shrubberies, difficulties have been created but not overcome; in short, it would not be easy to point to another work of public importance where the first principles of landscape gardening have been more persistently violated (always excepting the improvements in Hyde Park, in the neighbourhood of Albert Gate) than the ornamental ground between Villiers Street and Waterloo Bridge. The proper treatment of the ground is manifest. The boundary line separating the Embankment grounds from the slums of the Strand, including the arches of the Adelphi and ignoble outhouses of all kinds, should have a screen wall somewhat similar to that which screens the buildings in Whitehall Place.

All attempts at rural-landscape gardening should have been avoided, and the whole attention of the designer directed to urban embellishment. Rural landscape-gardening and urban embellishment are very different things. A central avenue of Plane trees, the only trees which thoroughly withstand the London smoke, terminated at the Charing Cross end by a handsome artichectural entrance—the York Stairs' Gate, for example, now ignobly buried at the foot of Buckingham Street—would be infinitely preferable to the meaningless paths, leading from nowhere to no whither, which at present puzzle the public. A central basin of sufficient dimensions, or an architectural mound of masonry or terra-cotta to contain flowers, would be quite enough in the way of floriculture. The ground should be, in fact, treated as an arboretum, not as a parterre. In the neighbourhood of the Strand, few evergreens thrive. The Holly, almost the hardiest tree we have, exists but does not thrive. Neither Laurel, Bay, nor Aucuba flourishes; Ivy, if of the right sort (which that on the ground alluded to is not), does fairly; Box never comes to much, and the Coniferæ are out of the question." [There is certainly nothing now seen on the Embankment more objectionable than an "architectural mound of masonry" would be.]

Garden Clerk at Kew.—Your correspondent (Mr. Handy) appears to think that a man under thirty might be found competent to fill this situation; but, possessing as I do an extensive knowledge of the sort of men to be found in the gardening world, and of the duties of the place in question, I still hold to the opinion I at first expressed, more especially as I know that he will have to undertake the supervision of men who have had time to get, and have got, "proper experience and knowledge of their business." A botatanical garden is a place quite different from a gentleman's garden, and a man, though thoroughly acquainted with the latter, is lost as soon as he gets into a botanical garden. As to Napoleon's generals, what he wanted in them was chiefly what is termed "dash," and for that young men were the best; but a man to be a good botanical gardener must study long and diligently before he can be considered to be master of his work.—J. Croucher.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—The unusual mildness of the past month, and more especially of the past week, has caused the buds of many shrubs to swell in a very unseasonable way, thus rendering them liable to injury from succeeding hard frosts, should such occur. Grass lawns are as green as they commonly are in March. In the case of flower beds, the surface soil should be slightly loosened whenever the weather is dry, but not so deeply as to injure bulbs planted therein. Spring-flowering plants are growing wonderfully; and Pansies and Daisies (Henderson's new double white one) are affording a few flowers, whilst different kinds of Christmas Roses are quite gay in the borders, and on walls the naked-flowered Jasmine is covered with its pretty Primrose-like blossoms. Alterations of all kinds should now be pushed forward with vigour whilst the weather is favourable for outdoor work. Trees of all sorts may be transplanted, taking care to lift them with as good balls as possible. After planting they should be firmly staked, and a mulching of litter or leaves placed over their roots.

Bedding Plants.—If Pelargoniums are to be wintered successfully in frames, keep them dry; give just sufficient water to moisten the whole of the soil in the pot when the plants begin to flag, but not a drop sooner. Remove all decaying leaves and everything else likely to generate damp; keep the sashes drip-proof, and admit fresh air freely by tilting them up throughout the day in favourable weather, but let them be shut up at night. Pelargoniums wintered on the top or other shelves of little conservatories or greenhouses should also be kept nearly dry. Calceolarias in frames should not be exposed beyond tilting up the sashes a little in fine weather; and they should also be kept clear of decaying leaves. Stir the surface soil amongst plants of Golden Feverfew planted in frames. Heliotropes, Ageratums, and Verbenas are best wintered near the glass in a minimum temperature of about 40°; and Iresines, Alternantheras, and Coleuses should have positions where the temperature does not fall below 45°. Salvias, Lantanas, Gazanias, &c., may be safely subjected to less heat. All these, however, must be kept moderately dry, though not too much so. Echeverias, Kleinias, Sedums, Sempervivums, Mesembryanthemums, and other all but hardy succulents, may safely be stored in double lines along the passages or on the shelves of greenhouses, or in frames—indeed, in any situation where they can be kept pretty dry, and have plenty of light and air. Roots of Dahlias, Cannas, Fuchsia fulgens, Erythrinas, &c., may be stored thickly together in dry cellars, and have a little moderately dry sand scattered over them.

Conservatories.—This is the best time for destroying mealy bug, red spider, green-fly, thrips, &c.; for if allowed to remain untouched until warm weather sets in their extirpation is effected with much more difficulty. Plants done flowering and whose foliage is not attractive enough to make them worth a place in the conservatory should be removed, and their places supplied from the forcing pit, or by a re-arrangement of the plants already in the house. Rhododendrons, Camellias, Acacias, Eugenias, Araucarias, and other evergreen plants, greenhouse Palms, and tree Ferns should be supplied with water as they require it, for at no period of the year will they submit with impunity to absolute drought. Nothing is so effective at present as the Rhododendron arboreum, plants of which are complete masses of brilliant scarlet; bright yellow is furnished by Coronillas, white by Camellias and Azaleas, and rosy-purple by Veronica imperialis. Use just sufficient fire-heat to keep out frost, and no more, and keep the atmosphere on the side of dryness, though paths and similar surfaces must be sprinkled now and then so as to maintain healthy action.

Forcing House.—Introduce in succession plants of Azaleas and Camellias, and syringe them slightly every day about noon. Place Callas in some warm corner, and if possible plunge them in a gentle bottom heat, giving them plenty of water and a little liquid manure occasionally. Keep them in 6-inch pots, which are large enough for them, and heed not the roots traversing the surface of the soil and down the sides of the pot until the flowers are formed, when all stray roots should be removed, the pots washed, and the plants gradually inured to less heat, finally consigning them to the conservatory. Lift Lilacs from the open ground with good roots, pot them, place them in heat, and syringe them twice a-day. If the purple kind is required to produce white flowers the plants must be forced in darkness. Ghent Azaleas, Weigelas, Jasminums, Kalmias, &c., are also now being forced. Place bulbs in heat as soon as they begin to push, and keep them there until they open their flowers. Spiræas, Lily of the Valley, &c., should be kept in cold frames and introduced into heat as required.

Stoves.—Keep all evergreen plants growing gently. If they are kept dry for a time, and then more freely watered, they are sure to start prematurely into growth; but if kept uniformly moist, and at the same time drier than during their growing season, they go to rest, and start strongly when placed under the influence of increased temperature, light, and moisture. On open, dry days, ventilate a little, but not to such an extent as to cause draughts, or to lower the temperature, and shut up early. Start some of the earliest rested Gloxinias, also a few Caladiums. Start likewise a few early rested Begonias, young plants of Pentas carnea, Justicias, Gesneras, &c. Withhold water from the roots of Xanthosomas, Remusatias, Curcumas, Caladiums, herbaceous Begonias, Achimenes, Gloxinias, &c., so as to induce the foliage to die down, then place the pots on their sides until the roots are quite at rest. After a week or two turn the soil out of the pots, gather the roots together according to their kind, and store them thickly in pots of silver sand, being careful not to mix the different sorts. Roots of Remusatias and Curcumas winter very well without being turned out of their pots. Orchids may be placed on new blocks if necessary, or top-dressed, or repotted; be careful not to give them too much water, though to such as are growing and flowering, some must be applied.

NURSERIES.

The busy season is at hand; consequently everything is being got ready for its approach. Peat is being got under cover or stacked out-of-doors, as are also loam, turf, leaf-mould, and sand. Pots are being washed, packing cases mended and new ones made, Willows cut and bundled, stakes renovated, and everything likely to be wanted in spring is being provided. The bulb trade is all but over for the season, and all hands are busy in the seed department. Cuttings of soft-wooded Heaths may yet be struck, as may also the young points of Boronias, Polygalas, and other hard-wooded greenhouse plants. Cut over a few Epacrises and place them in a moderate heat, to yield young shoots for cuttings. Separate and pot singly autumn-struck cuttings of Azaleas and Camellias. Place last autumn's struck Camellias, or those now sixteen months old, on a shelf near the glass, for grafting on in February and March. Repot some of the Heaths, in order that too much work may not occur at a time when it cannot be overcome. Introduce Pelargoniums, Verbenas, Lobelias, Tropæolums, Lantanas, Coleuses, Iresines, Alternantheras, Mesembryanthemum cordifolium, and similar plants into a brisk moist temperature, to start them into growth for cuttings. Keep roots of Cannas in pots dry by building the pots one above another in some dry cool place. Gradually dry off roots of Dahlia imperialis. Have a few good strong roots of Yellow Queen, Queen of Primroses, or other strong growing sort ready to graft D. imperialis on in spring. Sow Palm seeds as soon as imported in pans or boxes of loamy soil; the boxes may be kept in any odd corner until the seeds have germinated, when they must be placed in a more prominent position. Rooted cuttings of Stephanotis, Gardenias, Bouvardias, Aralias, Ixoras, Dracænas, Dieffenbachias, Pavettas, &c., must be potted singly, plunged in bottom heat, and kept under hand-lights or bell-glasses. Sow some Anthurium and Aglaonema seeds in some damp, spongy material, in heat. Gather the seeds of Aroids, Anthuriums, Aglaonemas, Ardisias, Solanums, &c., as soon as ripe. Sow some Cyclamens in an intermediate temperature, and keep the pans containing the seeds near the glass. Protect young flower-spikes of Orchids from cockroaches, by placing a little cotton around each, near its base; also poison these pests with phosphorus paste as you would rats, or trap them in little basins containing treacle and water. Good earthenware traps shaped like inverted basins are obtained at the potteries, so that when these depredators go to feed they drop in and get drowned. Sow Fern spores in rough peat, or in pans or pots, under bell-glasses, &c. Pot off the seedlings as they become fit for that operation, and also give older seedlings a shift.

MARKET GARDENS.

The dry, sunny days of the past week have had a beneficial influence on market gardens. All hands have been set to work; those who cannot dig, trench, or shake up litter are placed with the women and boys to loosen the soil amongst Cabbages, Coleworts, Lettuces, Parsley, transplanted Onions, and similar crops. Get August-sown Onion-beds thoroughly cleaned; women with half-sieve baskets, to put the weeds in as picked, soon go over a large space on a dry day. When finished, slightly dig or loosen the alleys, and transplant Lettuces or Cabbages therein. Get all empty quarters manured and trenched, throwing the soil into ridges 2 feet apart. Vacant ground under fruit trees manure and dig for Radishes, and be sure to have the trees thinned or pruned before the ground is interfered with. Radish beds sown early in December should be uncovered every morning, replacing the litter at night. Keep a boy for each series of beds to frighten off birds. Warm borders which contained Tomatoes in summer are best adapted for winter-sown Radishes. Under fruit trees the beds receive a little shelter, whilst the little shade caused by the naked branches does no harm. Remove handlights and sashes from Cauliflowers, Lettuces, and Onions during the daytime, but replace them at night. The smallest amount of rain must be excluded from the Lettuces, as they are so apt to damp off if they become wet; therefore rather tilt up the sashes than altogether remove them. Thin and weed the plants, and stir the soil a little amongst them. Scatter some lime over all kinds of crops, more especially over those transplanted permanently, such as Cauliflowers under hand-lights. If ground is required, lift the Jerusalem Artichokes and store them; if land is not wanted, merely cut over the stalks and spread a layer of litter along the top of each drill. Dig the ground between lines of Rhubarb, and place a forkful of litter ever each crown. Any Endive plants to spare plant in front of palings or walls. If the ground is required in which the general crop is growing lift the plants, tie a piece of matting around each, and lay them in thickly in a bed for a time. Protect them from severe weather by shaking some rough litter over them. Look over Mushroom beds twice a week if bearing well, if not, once will suffice. Examine Seakale beds producing Kale, and by means of the litter in the alleys and that covering the beds maintain an equable temperature. If necessary start two other beds by filling the alleys with fermenting manure, placing a covering of the same on the surface; over that put hoops and mats, to be covered with litter if wanted. Succession beds leave exposed. Treat Rhubarb in a similar way, but give the roots more room. Take the litter off sashes put over Mint frames, but replace it at night. Make another hotbed, lift another lot of roots, and start them to succeed those already in bearing.

PINE-APPLE CULTURE FOR JANUARY.

The season has arrived when many plants have started, some starting, and others showing fruit. Great care and attention will be required in every stage of Pine-apple culture for the next six weeks, to be successful with the plants when in blossom, and with fruit that is up, to prevent any kind of abortion to a single pip, or the uneven swelling so easily produced at this season. There must be no check or hurry, either by attempting to drive or hurry on those fruits that are in any stage of swelling. Nothing but time, patience, and persevering attention will succeed in kindly starting, blooming, and swelling fruit to perfection while we have short and dark days. Patience must allow from fourteen to twenty-eight days longer for winter fruit, according to variety, to swell than those that will start into fruit in February and March. If hurriedly forced, they will push up weak, long stalks, productive of small fruit, weak and irregular blossom, causing some pips to swell imperfectly, also causing uneven and abortive fruits, light in weight, and black inside, bearing overgrown crowns. From 65° to 70° should be maintained in the pits, with a kindly humidity during night, according to the light and sun by day, and the day interior atmosphere and humidity must be in proportion to the sun and light. For the withholding of water and humidity from fruit already finished swelling, and the placing of those almost coloured into a light dry situation, follow last month's instructions. For all growing succession plants maintain a kindly bottom and inside atmospheric heat, advancing it as the days lengthen, and light increases. Pot on plants in every stage that require it, never allowing their progress to be checked for want of pot-room at any season of the year. James Barnes.

THE GALE OF DECEMBER.

This is said to have been the most severe since 1703; but be that as it may, it is admitted to have been the strongest that has occurred within these last eight years, the pressure being at one time 33½ pounds to the square foot. Around London, glass houses were in some instances stripped. Many have foretold that my patent clip system of glazing without vertical sash-bars would not bear the wind power of a severe gale. I confess that as the sudden thuds of the gale shook the house in which I live, and the roof-tiles chattered, I slept nervously, but, in the case of 6,000 feet of glass fixed here, and upwards of 40,000 in different parts of the country, the only breakage has been one square here, and two at Brompton; thus, I think, very satisfactorily settling the matter of strength. Of course a house fully glazed is much safer than one partly so, but to show the immense resistance of Hartley's rolled plate glass, when properly fixed, I may relate the following fact. For some weeks past my men have been roofing a conservatory at Kidbroke Lodge, Blackheath, the grounds being parallel with those of Morden College. The house is 54 feet long, 35 feet wide, 18 feet high at the sides, and 30 feet high to the top of the roof, the latter being a centre span with short lean-to sides. One side is fixed to the dwelling house, but the ends of the conservatory and the front are in masonry, so as to correspond with the residence. My centre roof is carried by columns 12 feet apart, connected by means of light, ornamental wrought-iron girders, but, instead of the usual heavy cast-iron columns, I have introduced the light and elegant "Ribbon Posts" of the Manchester Ribbon Telegraph Post Company. These, before they were fixed, I had tested to the necessary strength, but of course I had no idea that they would have been so soon subjected to the wind trial through which they have passed so triumphantly. Owing to defective brickwork, carried out locally, the wall was found, when my men wanted to attach their roof, to be in a falling condition, and had to be taken down. In this predicament the ribbon posts had to do double duty by carrying the iron work of the side roof as well as the centre. Add to this the fact that at the time of the gale the centre roof and the inner side roof were glazed with Hartley's rolled plate glass, make the further addition of wind pressure of 33½ pounds to the foot, and it will be seen that this roof, without ends or sides, and unsupported by any side wall, had to support the enormous pressure of nearly three tons to the square of 100 feet. I have much pleasure in being able to thus bear testimony to the strength of the Ribbon Post, for it is not only cheaper than cast-iron, but, being of light, trellis-like pattern, is for all conservatory and garden purposes immeasurably superior to it. Any one who may walk to the Morden College corner of Blackheath may see the conservatory roof alluded to, and test the accuracy of my statement. Trees close by were torn up by their roots, but from the partly glazed and wholly unprotected roof not a single square of glass was removed. I may add that in different places I have considerable stretches of wall-fruit preservers fixed. The squares in these are each 3 feet long, but in no case has one been broken. W. P. Ayres.

Fire at Mr. Messenger's Horticultural Works.—We regret to learn that the works and machinery of Mr. Messenger, Horticultural Builder, Loughborough, have been destroyed by fire. Distressing as the effects of the fire have been, it is some consolation to learn that the workmen, whose chests of tools have been sacrificed, will not suffer much through loss of time, as temporary premises have already been taken to carry on the business, and the workshops will be immediately rebuilt. The principal loss is in the very large stock of prepared woodwork ready for erection, all being painted ready for sending off. Fortunately the bulk of Mr. Messenger's dry timber was stowed in other parts of the town, and thus saved from the general wreck.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

GROUND WORK.

The importance of properly forming ground is very rarely sufficiently recognised. The other day we saw a croquet ground in the course of formation. To get the proper level, nearly 2 feet deep of soil had to be taken from the top part of the ground, to be filled in at the bottom. A person who understood the work would have filled in the loose soil in layers, 4 or 6 inches thick, and then rammed and consolidated it as the work proceeded. But as our learned amateur knew better than that, he wheeled the soil into its place to the full thickness, and having levelled it roughly, passed the garden roller over it several times, and having given the surface a smoothing with the rake proceeded to lay the turf. What will be the consequence? Just this. When the rain comes the turf in the soil will decay, and the whole will subside into a series of miniature pitfalls, rendering it useless as a croquet ground and necessitating the renewal of the work. Now, in the formation of a croquet, cricket, or bowling ground, or even the formation of a lawn or flower garden, it is necessary that the ground should be removed to a uniform depth, and if it is not it is indispensable that the soil in every hole should be properly rammed until it is brought to the proper surface level. In this manner the turf may have a smooth and proper foundation, and without that it is a waste of time to lay the turf at all. Soils differ much in the amount of compression which they require. Land, free from vegetable matter, will, after a good soaking rain, go together so closely as to need but little further compression, but fresh soil full of fibre will rot and settle for years if it is not thoroughly consolidated at the commencement of the work. Loamy soils can easily be properly handled when they are dry. If you attempt to ram them when they are wet you will form a plastic mass through which the rain will pass with difficulty, and hence the surface will always be damp and mossy, but if you ram such a soil when it is in a comparatively dry state, you may make it solid, and yet the interstices between the particles of soil will be sufficient to allow the surface water to escape with facility. In relation to new ground work a gentleman remarked the other day: "If that work had been done by the day I should have considered I was being most shamefully robbed, but now I see that the care you insist upon is necessary, and that the work is being executed in the best possible manner."

VINE FAILURES.

Nearly all gardeners of any extent of experience must have observed that certain vineries become suddenly famous for their crops of Grapes, and as suddenly lose the reputation thus obtained. That there is some sufficient cause or causes for this sudden wax and wane of fruitfulness, no sane man will deny, any more than he will the importance of a discovery of a remedy for the latter; and in order to arrive at some safe conclusions on the subject, I will proceed to make a diagnosis of a set of "worn-out-Vines," and of the border they are planted in—I cannot say growing in, for the active roots have left it years ago. What, then, do I find? small, thin, flaccid foliage, the lateral growths getting annually smaller in wood and larger in pith; the foot-stalks of the bunches long and slender; the bunches composed one of half-matured, the other of shanked berries; the Vines very subject to attacks of red spider, or any other living pest that afflicts the Vine. If the atmosphere is kept moist, they throw out a great many air-roots. Altogether they are in a most unsatisfactory condition. Then what of the border? Dig down a foot deep in it and you find no young, active roots. The soil is more of the consistency of putty than anything else. It was rich when compounded, and is so much the worse now. In the process of its removal you come upon a fine large bare root, running as direct across it to the gravel walk beyond as the cable does across the Atlantic, and you are provoked to find that though there is not a living rootlet in the border that has been prepared with such care, there are abundance branching in all directions among the broken bricks, stones, ashes, or gravel, as the case may be, that form the walk. My readers will probably remark, Then why not make the whole border of brickbats, stones, or gravel? I reply, better it were so than as matters but too frequently are found; at the same time I hold that a border properly made of good loam, with the addition of a few bones, a little horse-manure, and, if the soil is heavy, some brick rubbish or burnt clay, or both, is far more likely to give good results than bricks, stones, or ashes. The reasons why the roots branch in all directions in the walk are that undoubted law of nature which provides many roots for a plant on poor soil as compared with those on rich, and the sweeter state—to use a technical term—of the material of which the walk is framed, as compared with the border, kept so by the air in the interstices amongst the stones. Others of the roots, as I have often found, have gone down into the miserably poor sand or gravel of the subsoil. They are anywhere, in fact, but where they were intended to be. Your neighbour plants a vinery, and he means to prevent the evil complained of. He bricks up the arches of his front wall to compel the roots to live at home till they occupy the inside border well, when he means to let them out; but they have their revenge, for they go first to the bricks, then trace them down to feel if they can get out underneath them. They fail, but they are away a yard from the surface, and when let out commence their march across the border at such a depth as deprives them of the genial influences of heat and air. So much for what we learn from an examination of the old Vines and their border. I will now, founding on much experience, suggest what the Vines may have been like when planted. They were probably what are styled in the advertisements of the present day, "fine strong planting canes," and to the comparatively inexperienced they appeared all they were represented, but a critical examination proved that they were as pithy as a rush. They had no well-plumped firm eyes, and when turned out of their pots it was discovered that they were grown in rich soil, half dung in fact, that they had been grown in bottom heat, and that many of the roots formed under such circumstances had decayed when exposed to a degree of cold that would do no injury to a properly grown Vine. They have been raised from eyes in small pots, where they remained till their tap-roots had made several journeys round the inside of the pot, when they were transferred to a 9 or 10-inch pot, to finish their growth and make several more coils round it. Another aspect of their treatment in early youth was that they were grown as near each other in a close moist atmosphere as beans in a field, their foliage never getting properly exposed to light and air. I by no means blame nurserymen for growing them thus, while the Vine-buying public expect to get "fine strong planting canes for 3s. 6d., and fine fruiting ditto at 5s." The thing is simply impossible at the present rate of labour and other appliances, including the space the Vines would require to grow them properly. This is a real case of sinking the ship to save a pennyworth of tar. I may here remark that I observe another delusion springing up at the present day about Vines for planting. I refer to advertisements setting forth that the subscribers can supply young Vines grown *without the aid of artificial heat*—as if this were likely to add to their value, when the reverse is the case. No Vine should be planted that is more than a year old from an eye, and to get such well grown and ripened in the climate of Britain requires more or less fire-heat. Such being the Vines, let us turn them out of their pots and proceed to plant them. The roots that have survived are twisted and entangled in all directions, and by the time leading roots are disengaged from the ball, there are no small laterals left on them; but they are a good length, and when spread out reach a long way across the border. While the stored-up sap in the Vine and roots lasts, progress in growth is made for a short time; and after a halt, young roots start from the points of the old extended roots, and, if the border has all been made up at once, get rapidly on with their journey across it.

Gardener.

Another Poison.—There has lately been discovered a poison called Inæa, which is said to be more subtle than digitaline. The poison is obtained by pressure from the seeds of Strophanthus hispidus, an Apocynaceous plant, found in Gaboon; and from experiments made with samples of it, obtained from arrows, upon which the natives place it, as recorded in the *Lancet*, it appears that it acts more powerfully than digitaline or antiarine, and quickly paralyzes the heart. Three millegrammes kill a frog, a sparrow, or a dog, though the resistance of certain animals varies. A snail, for instance, requires five millegrammes; a mouse has withstood three millegrammes of the extract (obtained by macerating the seeds in alcohol), whilst this latter dose kills a dog 955 times heavier than the mouse. The heart comes to a complete standstill after a few irregular efforts.

NOTES OF THE WEEK.

—— Mr. Penny, formerly of St. Dunstan's, Regent's Park, has been appointed superintendent of the gardens of His Royal Highness the Prince of Wales at Sandringham. We also hear that Mr. Carmichael, who has, hitherto, been gardenor there, has been appointed to succeed the late Mr. Donald at Hampton Court.

—— As we go to press the few old Thorns that for many years have been the only vegetable adornments of Leicester Square are being cut down, and a very high hoarding erected, so that this too famous space will now be concealed by something scarcely less hideous than the surface of the square for the past year.

—— While in the west, the interior, and north of France the rain has been incessant, as in England, there is a perfect drought in that part on the coast of the Mediterranean. Thus at Montpellier, at the present time, they are likely to offer public prayers for rain, it being more than two months since they have had any.

—— We have just tasted some Easter Beurré Pears that have come all the way from California. They have travelled well, and may now be seen in some of the shop windows in Covent Garden. As regards their quality, it is decidedly superior to that of either English or French fruit of the same kind, the flavour being very fine and the flesh of a more even and tender texture than that of European-grown Pears.

—— A young tree of the true Glastonbury Thorn, growing in Mr. Dean's seed grounds at Bedfont, in an exposed situation, has already pushed shoots an inch in length from the extremities of the old wood, and bunches of flower-buds are visible. In a warm place, and during a mild winter, therefore, it would be no great wonder to see this Thorn in bloom on Old Christmas Day.—A.

—— Mr. Perry informs us that various kinds of Narcissi are coming into flower in the open ground at Tottenham, where Schizostylis coccinea, and Tritoma Uvaria are still in considerable beauty. Snowdrops, too, are in flower in the same locality, as are also Primroses, including many double kinds, and the charming little yellow-eyed crimson Primula altaica. To these must also be added Cyclamen vernum and Atkinsi, Potentillas, Geums, Tussilago fragrans, Lithospermum prostratum, Eranthis hyemalis, and the pretty deep sky-blue flowered Anemone blanda.

—— We have just received the first number of the weekly issue of the *Gardeners' Record*, an Irish horticultural journal, which hitherto has only been published fortnightly. Its size has been increased, while its price has been reduced and a page or two devoted to agricultural matters has been added to it. An undertaking begun with so much spirit deserves hearty support, which we hope it will receive.

—— The tender little Cabbage Lettuces grown around Paris under the cloche, and also on gentle hot-beds, are now abundant in Covent Garden and in other English markets; they have been procurable since the beginning of December, and are now rapidly improving in quality.

—— The scarcity of fruit has led to the importation of Pears in the way of the Colmar type from the neighbourhood of Trieste.

—— A political Christmas tree was exhibited in Paris lately. It was a good-sized Fir from the Vosges mountains, torn up by the roots, with a quantity of the native soil of Alsace still clinging to it. Around this tree, richly laden with toys and bonbons, were congregated 2,000 children of Alsace and Lorraine exiles. M. Gambetta and several other deputies were present.

—— The owner of one of the most interesting bulb gardens in the neighbourhood of London writes to us concerning it as follows: "If there are 'sermons in stones and books in the running brooks,' what must there be in flowers to a pent-up denizen of this great metropolis! Suppose the Thames Embankment, the borders in Hyde Park, and in Battersea Park were radiant now with something attractive, how tempting would it be to stroll out and inspect them on such a day as last Sunday—a day of sunshine and shower, when at one period we had April and at another December. During the April phase of the day I wandered to my bulb garden to see what sweet faces had unveiled themselves since my last visit. First on the list was Crocus Imperati, with its beautiful fawn-coloured black striped outer petals and inner purple petals, flaunting gaily in the sun with as much importance as the fair damsels who now display themselves in parti-coloured dresses; for verily, if this last development of dress was taken from nature, it must have been from Crocus Imperati, of which I send you a few flowers. My next attendant was Crocus Sieberi, a lovely purple. Having examined these, I turned to see what else there was to welcome me; and among other things there was a stray flower of the beautiful bright yellow Sternbergia lutea. Further on the pretty winter Aconites, with their rich green foliage, were in full bloom. I next turned to my Cyclamen bed; there, notwithstanding the wetness of the season, C. hederæfolium græcum was covering the ground with rich and massive foliage; not a yellow leaf or the slightest symptom of ill health was visible. Close by was C. repandum, producing a profusion of rich red flowers. Further on Hepaticas were unfolding their lovely blossoms, and Narcissus maximus was just raising its head from amidst the foliage, evidently requiring a week or two more of mild weather ere it will unfold its ample golden blossoms."

—— Epidendrum erubescens is now in flower at Ferniehurst. Masdevallia tovarensis is also in bloom at the same place, the plant bearing about a dozen of its snow-white flowers.—F. W. B.

—— "I have this day (January 3rd)," says Mr. Richard Nisbet, gardener at Aswarby Park, "gathered twelve fine half-blown Roses from a plant of Devoniensis, growing against a south wall. With us this old and favourite variety is always the first to open its buds and the last to go out of flower; it is, therefore, more esteemed than any other Rose grown in this part of Lincolnshire."

—— The Gurney family have made a most munificent offer to the inhabitants of West Ham and Stratford. It appears that those who are moving in the purchase of West Ham Park for a public recreation ground having put themselves in communication with the owners, have received an offer, in which the whole of the estate is offered to the parish for £25,000, and of this amount the Gurney family agree to contribute £10,000, allowing a large portion of the balance to remain on mortgage.

—— Mr. Samuel Morley, M.P., has forwarded a second donation of £50 to the Forest Fund, to assist the work of preservation of Epping Forest as an open space for the people of London. Prosecutions have also been instituted against people who have felled trees in, or otherwise damaged, the forest, which is hereafter to be kept intact.

—— In reference to the dispute between Mr. Ayrton and Dr. Hooker, we understand that a memorial to Mr. Gladstone has been prepared, which has already received the signature of almost every leading botanist in England unconnected with either Kew or the British Museum, setting forth the enormous gain which has accrued to science by the scientific work done at the gardens and herbarium at Kew under the management of the two Hookers.

—— Mr. Bull, of Chelsea, intends to offer £300 in silver cups for new plants during the next three years, as follows, viz., £100 each year; the value of £50 at the principal show to be held at Kensington in June (this season on the 4th, 5th, and 6th of that month), and the value of £50 at the society's provincial show, which takes place this year at Bath, on June the 24th to the 28th. The £50 will in each case be divided thus:—For private growers, first prize, silver cup value £12; second ditto, £8; third ditto, £5; for nurserymen, first prize, silver cup value £12; second ditto, £8; third ditto, £5. The competition to take place with twelve new plants of Mr. Bull's introduction, and sent out since the commencement of 1870 (this date being altered in the subsequent years to 1871 and 1872 respectively) as announced in his annual catalogues, which are to be the standard of reference as to the eligibility of particular plants.

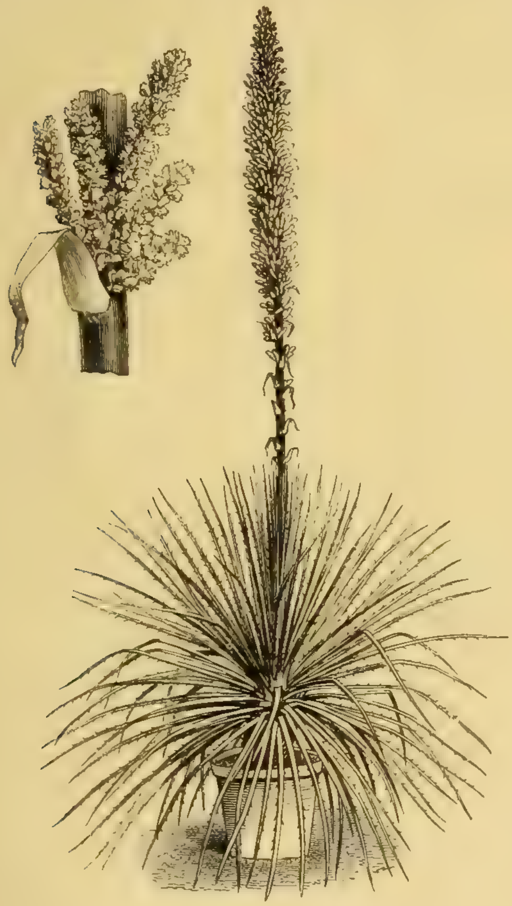
—— The *Wilmington Commercial* prints some figures, claimed to be "substantially exact," regarding the Peach product of the Delaware Peninsula during the present year. The columns foot up to the grand total of 3,491,050 baskets, these representing only the actual shipments by rail and water, the 73,282 baskets used by canners, and the 10,000 baskets consumed in Wilmington. To these are to be added three important items, namely, the Peaches eaten on the farms, those distilled into brandy, and those sold for consumption in the several towns on the peninsula outside of Wilmington, all of which, it is calculated, will bring the total up to 3,600,000 baskets. The success of the Peach in this peninsula, girt by the Atlantic, Delaware, and Chesapeake Bay seems to point out that a marine climate is favourable to the Peach. We have noticed like evidence in England and Ireland.

—— The beautiful Æchmea Reginæ, which we noticed a few weeks back as being so fine in the Upper Holloway Nurseries, may still be seen there in superb condition. The continuity of beauty in the flower-spikes of this new Bromeliad greatly enhances its value; for although six weeks have elapsed since it expanded its flowers, it promises to continue in beauty for as long a period yet to come. The coloured leaves attached to the flower-spike constitute its greatest beauty, their colour being a brilliant magenta tinged with violet. The flowers themselves, which are produced in great conical heads, are tipped with violet blue. The foliage is robust and ornamental, and the plant is apparently a free grower.

THE INDOOR GARDEN.

DASYLIRION GLAUCUM.

This is usually met with, in nurseries, under the name of Bonapartea glauca. It is, however, not a Bonapartea, but apparently a Dasylirion. It has a solid stem, like that of a Dracæna, thick and very short, the leaves, which are thick and glaucous, spreading out gracefully at the base in all directions, so as to form a round tuft. The leaves, whose edges are beset with short teeth, are hard and dry, especially at the extremities, and from their midst issues a stout flower-stem, which grows to a considerable height. At its base are little leaves, which gradually diminish, so that the higher ones are almost reduced to the size of scales, and soon dry up, as also happens to Yuccas. The flower-stem for at least two-thirds of its length is covered with clusters of flowers, which, though not very showy, are extremely interesting. Of the general appearance of the plant when in bloom, the accompanying woodcut will furnish a good idea.



Dasylirion glaucum.

LINUM TRIGYNUM.

A little more than twelve months ago, in dark November, when the rain was falling in torrents, and the fog hung over the hills at midday almost as thick as at midnight, business called me into Derbyshire; and, as I make it a rule never to visit that county without calling at the "Palace," I made my way to Chatsworth, feeling convinced that, however much the storm might pelt without, I should, once under cover of the large conservatory and other glass houses, find that I had a taste of perpetual summer. I passed through the Orchid houses, glanced at the Chrysanthemums, admired the Palms and other foliage plants, and also the Camellias, and, arrived at the portal of the huge conservatory, the large folding doors were thrown open, and I stood amazed. On each side of the central carriage drive which divides this house stood magnificent bushes of glowing gold, so much larger and finer than I had ever seen the plant before that I could not for the moment call to mind what it was. It was Linum trigynum. Now, if the reader will imagine trusses of from ten to thirty flowers, each as large as a half-crown piece, quite as flat and circular, and of brighter orange than the brightest Calceolaria, he will have some conception of what dense bushes, 4 to 6 feet high, and as much in diameter, must appear on such a day. These plants were growing in the open border of the house, and were bushes such as must give one an idea of what the plant must be in its native habitat. But it is not everyone who can grow this Linum in a conservatory border, as to bloom it thoroughly requires something more than the heat of a conservatory, and that cannot always be given. The mistake in its cultivation, especially in the nurseries, has been greenhouse treatment. The plant is a native of the East Indies and requires a warm temperature. The right treatment to follow is to take cuttings of either the young or ripened wood in February, and to strike them in gentle bottom heat. They strike with great freedom, so that from a single plant a large stock may soon be obtained. When rooted, pot them off singly, using a compost of turfy loam and leaf-mould, to which sand and charcoal broken small, to make it porous, may be added. Keep the plants in a moist atmosphere until they are established in the fresh pots, and then gradually inure them to more air. Once established, they will grow with great rapidity; but it is not worth while to stop them until the pots are well filled with roots; then dry them for a few days, and cut them boldly back to within 3 or 4 inches of the pot. This will cause them to break a number of shoots from the base, and from these sufficient may be selected to form the foundation of a plant. When the young shoots are about an inch long, repot the plants into pots two sizes larger than those they have been in, using the same compost, and adding a sprinkling of bone-dust to it. After this shift, if kept in a temperature of from 60° to 70°, freely syringed twice or thrice a day, and assisted, after the pots are full of roots, with weak liquid manure, they will grow with great rapidity, so as to form handsome specimens from 18 inches to 2 feet in diameter and the same in height. To this end they will require to be stopped a time or two during the season, but the last stopping should not be later than the end of July, or the young wood will not get sufficiently ripe to bloom. The greenhouse will be the best place during the autumn, and care must be taken to bring the plants gradually into a state of rest. If desired, they may receive a second shift, but this is not necessary unless very large plants are required. By the end of September some of them may be placed in a higher temperature, and they will begin to bloom in November, and continue to do so until the spring. The greatest drawback to this plant is its liability to the attacks of red spider. This pest grows fat upon it with singular rapidity, and therefore a sharp watch must be kept. The best plan to keep the spider in check is to lay the plants upon their sides, if they are in pots, at least once a week, and to syringe them thoroughly on the under-sides of the leaves. This will dislodge the insects, and also their eggs. Should the plants by any mischance become infested, then syringe them immediately and dust with sulphur. In the second season, when they have done blooming, they may be dried off a little and then pruned close back. After they break, thin out the superfluous shoots, shake the soil from the roots without injuring them, and repot into fresh soil. The treatment as to temperature, potting, and watering will be the same as during the first season. In this manner handsome plants of this Linum may be grown with little trouble, and the display of bloom will be very striking. A.

SPECIFIC VARIATION AMONG ORCHIDS.

We may search through the entire vegetable kingdom and find but few classes of plants that vary more than Orchids do, so far as depth and richness of colouring and the relative size and shape of the flowers themselves are concerned. They also vary greatly in regard to constitutional vigour, as may be proved by growing a batch of newly imported plants of the same species under precisely the same conditions, when it will invariably be found that some grow much more vigorously than others, although there were no external signs of superiority to be detected amongst them, even by the most experienced grower, when they were first potted. As a striking illustration of their variability, I may cite the lovely winter-flowering Lycaste Skinneri, which varies in colour from the purest white to a very deep rosy variety, having a deep crimson lip; and this variability is equally apparent in other species belonging to different genera, which run from the typical form into the most distinct and beautiful of varieties imaginable. Cattleyas are notorious for their protean variability, while the chaste Odontoglossum (crispum) Alexandræ—that queen of Odontoglots—is extremely variable in the size and colouring of its blossoms. Phalænopsis grandiflora exists in many different forms in our collections, several of which are well marked and distinct, not only in the breadth of their sepals, the depth and diffusion of the yellow colour on the lips, but also in the length and breadth of their leaves, as well as in constitutional vigour. The same remarks apply to several other species, as P. Luddemanniana, P. amabilis, and P. Schilleriana; the latter has the most robust constitution of any species in this truly superb genus, and it is the only species that will subject itself to cool treatment. I would here remark that the mere mention of the breadth of a flower gives no substantial proof of its being a first-class variety, since many long-petalled flimsy flowers measure a good deal across, but are comparatively worthless, since they lack breadth and substance in their sepals and petals.

In one of the finest collections of Phalænopsids in this country there are some twenty or thirty imported plants, which vary greatly in breadth of petal and substance. Hence it becomes apparent that when we purchase Orchids, we should be careful to select as good varieties of them as possible. There are some Orchids, too, which vary greatly, not only as has just been related, but also in the length and thickness of their pseudo-bulbs, and in their flowering propensities. For an example of this, take Lælia majalis—the Flor de Maio of the Mexican Spaniards—of which there are two distinct varieties differing in the length of their pseudo-bulbs. The short-bulbed variety blooms with tolerable regularity, while the other may be grown on for years without its ever producing a single flower. Mr. James Anderson, gardener to F. Dawson, Esq., of Meadowbank, has succeeded in flowering this species regularly during these last few years. It will thus be seen that "good varieties" are those which bloom freely, and that produce large, richly coloured flowers of good substance. What, it may be asked, causes this striking divergence from the normal types in different species? We can only account for diversity in colour, size, form, and constitution by the fact that in their native habitats, where several species bloom in close proximity simultaneously, they are exposed to the fertilising agency of insects, and being reproduced from seed it follows that some proportion, if not all the seedlings, vary as has just been stated. Everyone who has raised seedlings of any class of plants will understand that they are apt to differ from the parent plant; more especially is this the case when these varieties are again cross-fertilised, producing other plants even more diverse than themselves. I willingly allow that local circumstances and conditions affect plants, and cause variety in individuals to a certain extent, when they exist under different surrounding influences, but the great bulk of our best varieties owe their beauty to cross-breeding, as effected by insect agency. We are well aware that nearly all the seedling Orchids raised in this country, with the exception of Disa grandiflora and Cypripedium Schlimmii, have proved on flowering to be more or less distinct from their parents, and this is a pretty conclusive proof that cross-fertilisation in their native habitats is the origination of all the beautiful varieties introduced from the tropics. This extreme variability in Orchidaceous plants adds an additional charm to their cultivation, for with what unfeigned anxiety does the amateur or professional cultivator watch an imported plant showing its flower-spike for the first time! How carefully he compares its pseudo bulbs or foliage with those of its relatives, and if its external habit of growth does not betray him, if it really is a new species, or an extraordinary variety, with what genuine pleasure does he watch the delicate stranger unfold its floral treasures. Seeing, therefore, that Orchids vary so much in a wild state, and even under cultivation, need it be wondered at that portraits of such plants vary? The difference that exists between representations of the same plant in different books has often been a matter of complaint; but the disparity in question is not by any means greater than may be found to exist in the different varieties of the plants themselves from which the drawings were originally made.

F. W. Burbidge.

Acineta Humboldti.—Last summer I saw a pair of magnificent plants of this species, flowering in the gardens at Crow Nest, near Halifax, the seat of Sir Titus Salt, Bart. They were growing in wire baskets suspended from the roof, and bore twenty-six splendid spikes, thirteen on each specimen. On one spike alone I counted thirteen fine blossoms. Mr. Nicol, who is gardener there, grows a great variety of really good Orchids, though not favoured with the most approved structures for the purpose. Acineta densa and A. Barkerii are two of the best species of this genus, and bear golden yellow flowers, the former being spotted with crimson. A. Humboldti unfortunately does not last well when in flower, and in this respect is surpassed by its congeners. In addition to the above, Mr. Nicol has been very successful with Dendrobium densiflorum; some of his plants of it have bulbs 2 feet long, and in 1870 one fine specimen of this Dendrobe bore fifty-two spikes, which collectively had considerably over one thousand flowers, all fully expanded at the same time! In this collection Chysis bractescens, a beautiful but scarce Orchid, has also one large plump pseudo bulb, nearly 2 feet long, and several smaller ones. This plant produces three or four spikes annually, and has borne twenty-six flowers fully expanded at the same time.—F. W. Burbidge.

GARDEN DESTROYERS.

THE LIME-LOOPER OR MOTTLED UMBER MOTH.

GEOMETBA (HYBERNIA) DEFOLIARIA.

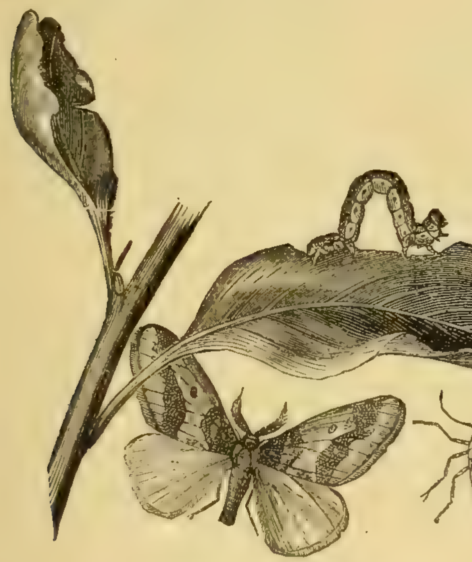
This is one of the Geometer moths or Loopers, in which the male is provided with wings, and the female with none. The larva, the male, and the female, are all represented of the size of nature in the accompanying woodcut. The colour of the larva is ferruginous red above, with a yellow band along the sides, and a ferruginous spot, having a white centre, around each tracheal, or breathing opening of the perfect insect. The male is very variable in colour and design; its normal pattern is that figured. The pale parts of the upper wings are yellowish or rusty yellow, the darker parts are ferruginous edged with black. The under wings are pale grey with a yellowish margin, and a small blackish spot in the middle. It sometimes, however, has no pattern on the wings at all, being entirely of a reddish freckled brown. The female is more or less yellowish, with no black spots on the back of each segment. The chrysalis is reddish brown.

This, if it were an Apple or a Pear, would be called a winter fruit, the perfect insect not appearing until the end of October and beginning of November. As soon as the female comes out she climbs up the stem of the nearest tree, where the male seeks her, and she lays her eggs at the base of the buds. These remain exposed to the weather all winter, and are developed by the return of warmth in spring, and the young larvæ are hatched simultaneously with the bursting of the buds. The coincidence of the appearance of the leaves with that of the larvæ is, of course, due to the same degree of warmth being necessary for the development of both; but it is not the less remarkable as an instance of the perfection of the adaptation of relations between plants and the animals that feed on them. As soon as hatched, they spread over the leaves, each on its own account; not associating in company, as many other larvæ do in their young stage. They are very voracious, so much so that they often entirely strip the trees of their leaves; whence their specific name "defoliaria."

In the fine mornings of May or June the caterpillars of this moth may be often seen hanging from their twig or leaf by a tiny thread a foot or two in length, and swinging for hours in the gentle breezes of that genial season. Mr. Newman says: "This suspension seems to be sometimes a voluntary and recreational performance, for in passing through the woods I have seen thousands upon thousands of these beautiful caterpillars thus dangling in mid-air, and not unfrequently swinging themselves into my mouth and eyes." It is, however, also a means of protection, for when disturbed they let themselves suddenly drop from their perch, of course falling no farther than the length of their thread, which being very elastic lets them down easily.

By the middle of June they are full fed, and, descending to the ground, bury themselves in the earth very near the surface, and there undergo their metamorphoses. As already mentioned they remain in the chrysalis until the end of October. They are no ways particular as to the kind of trees on which they feed. The Lime tree is an especial favourite, also all kinds of fruit trees and Thorns; the Oak and other deciduous forest trees are also subject to their attacks.

This is one of the few insects for whose ravages the entomologist can propose a remedy drawn from the special structure and habits of the insect itself. The metamorphoses taking place in the ground, and the female being apterous, and requiring to lay her eggs beside the buds high up in the trees, are a concurrence of special circumstances which suggest an easy means of prevention. As she begins her course on the ground and has to ascend the trees before she can do any harm, and having no wings by which to fly up to the branches, must creep or walk up like any other walking or creeping thing, it is plain that if means be taken to prevent her getting up, the buds above are safe. The first mechanical means which were taken for this purpose, was enclosing the stem of each tree in a close fitting wooden boot, which was smeared with tar. It does not appear, however, that such a wooden boot is necessary. It is sufficient to smear the stem itself for a broad space near the bottom with coal tar or any gluey substance at the proper time, *i.e.*, in the end of October and in November. In attempting to ascend the female gets entangled in this and perishes, without ever having the opportunity of laying her eggs, and as they usually amount to 300 or 400 in number, it is obvious that the gain is considerable for every female so destroyed. It has been objected to smearing the stem of the tree itself with tar that this may injure the timber by the tar soaking through the bark and interfering with the ascent of the natural sap. We believe this fear to be imaginary; but to remove all doubts on the subject, some less penetrating glue may be substituted, or the part of the stem which is to be covered might be previously protected by some hard varnish, or what is called distemper. A mixture of tar and cart grease has been found to answer without injuring the trees, unless applied in the spring months when the sap is rising. Beating down the caterpillars into a sheet spread below the trees has also been had recourse to; but that is not nearly so efficacious a plan as the preceding, although it has the advantage of being more immediate, for the preventive cure of course only applies to the following season. A. M.



The Lime-looper.

Caterpillars on Cabbages.—One of my friends, a landed proprietor in the Ardennes, informs me that, one day, having observed in the garden of a peasant that the Cabbages were covered with fronds of the common Bracken (Pteris aquilina), he inquired the reason, and was told by the owner that it was a certain and easy way to get rid of caterpillars. My friend made a trial of the remedy himself, and he assures me that in one hour after the Bracken-fronds were laid on not a caterpillar was to be seen. Elder-leaves are said to be equally efficacious.—E. M., in *Belgique Horticole.*

VEGETATION IN WESTERN AUSTRALIA.

King George's Sound, as most of your readers will be aware, is the coaling station of the Peninsular and Oriental mail steamers, the chief town of the district being Albany. The place, like so many Australian towns, consists of a main street with here and there an effort on the part of cross streets. These efforts, however, do not appear to have been long sustained—appear, in fact, to have been checked by the prospect of people being led recklessly to dwell in the bush. The streets are, therefore, cut off short, but the eye is able to detect the projected line from the appearance at intervals of a stray cottage, where some spirit more courageous than the rest has struck out and established a home for itself. Arriving recently at the Sound, about midnight, on a homeward trip, I obtained permission to go ashore in the mail boat. The time was early morning (two a.m.). A long and weary pull, with a Lascar crew, against a rapidly declining tide, and in the teeth of a squall, brought us within sight of the still sleeping township, and a vigorous spurt by the oarsmen laid us alongside the steps of the pier. After depositing the mails in the post-office—a substantial structure, which appears to do duty as custom-house and generally useful depôt for the settlement's departmental affairs, I managed to get a shakedown till daylight. Starting then I ascended Mount Melville, which rises to the left of the town. At its foot passes the turnpike road to Perth, a town lying inland some 256 miles. The low-lying grounds at the foot of this mountain were clothed with plants in most gorgeous blossom, many of them being new varieties of plants familiar to me in the Victorian bush. In less than an hour I gathered more specimens than my arms could encircle; and filled my pockets to overflowing with cones and seeds of new and charming plants, suitable for garden decoration. Leaving these at the hotel I proceeded to explore a promising tract of country lying to the right of the town, from which abruptly rises Mount Clarence to the height of about 700 feet. Here and there the granite crops out on the sides of this mountain, in places many roods of the surface presenting a bare, unbroken face of stone, from which solid blocks as large as churches might be quarried. At the foot of this mountain, and covering the lower grounds to the contour-line of the coast, a vast number of flowering shrubs is to be found, and I very much regret that the short stay of the steamer prevented me from doing even scant justice to the floral gems which bedecked valley and mountain. At this, the late winter season of the year, numerous springs trickle slowly from the sides of the mountain; their course being marked by narrow lines of a pure white silver sand, the lighter and peaty portions of the soil and other soluble matters being washed to the lower levels. This sand, and even the soil, is destined some day to attract the attention of nurserymen in the other Australian Colonies, who still import Reigate sand for purposes of propagation, and who are often put to great inconvenience through the difficulty of procuring suitable soil for potting purposes. I can only notice here a few of the beautiful things so abundant on this mountain and in the rich valley at its foot, but these will serve to show the floral wealth of the district.

A shrubby variety of Solanum, with large cream-coloured flowers and broad handsome foliage, is very highly perfumed, a drawback to its culture, however, being that its petals are poisonous, several accidents to children in the district being recorded. Two varieties of Chorozema, with orange and carmine flowers, grow very generally here; one of climbing habit, and bearing flowers twice the size of C. cordatum. Two pink Boronias are found in the higher grounds, and hereabouts Boronia megastigma has its home, the air for many hundreds of yards being laden with its ravishing perfume of lemon and rose. Two varieties of Hovea—elliptica and ilicifolia—are covered with their rich cobalt racemes of blossom, the flowers resembling in shape those of the Kennedyas, though the colour is an intense blue instead of purple, and each bloom is much larger than that of the Kennedya. These two Hoveas are exceedingly valuable, their dwarf habit, unusual colour, and their season of blooming rendering them great acquisitions, not only for English greenhouses but also for the borders of the Australian flower gardens. A fine Dillwynia, much brighter in colour and larger than D. cinerascens of the Victorian bush, is here truly beautiful, its rich and abundant orange-yellow blossoms being very conspicuous. The district is also rich in Banksias, fully twelve kinds being procurable within a mile of the town. Banksia coccinea is perhaps the most showy as regards blossom, the whole bush being scarlet from the prevalence of this variety. Seedling plants of not more than a few months' growth are in bloom, while trees of all stages beyond this are covered with scores of flower heads. Unlike many of the Banksias, this showy variety blooms early when young, and the tree has not to attain timber proportions before it can be seen in perfection. The plant is not found in the gardens of Melbourne and Sydney, where it would be perfectly at home and would prove unusually attractive in shrubberies. Banksia Brownii, B. littoralis, and B. grandis, the finest of the genus, are all met with here, as are also many varieties as yet unnamed. There are many kinds of Acacia here new to me, but these are not very noteworthy; the Acacia Drummondii grows further inland, and is perhaps the most striking member of this extensive family. Two very compact-growing Andersonias—one with blue and white, the other with purple and pink blossoms—would be a great acquisition to the flower gardens of other parts of temperate Australia and to the conservatories of Europe. Among other interesting plants were to be seen several kinds of Kennedya, Pimelea decussata, P. nana, P. macrocephala, and P. Hendersonii; Boronia elatior and other species, a Gompholobium, a fine large purple and white flowered Lobelia, Gastrolobiums, a rich golden flowered shrubby Grevillea, Swainsonas, two kinds, fully fifty Epacrises, and other plants, several with very showy Papilionaceous flowers.

In the immediate vicinity of King George's Sound there is scarcely a tree of any size; even the Eucalypts are, by reason of their full exposure to southerly winds, reduced to mere shrubby growth, the largest tree near the coast being the weeping Melaleuca, which fringes the shore near Albany. Growing along the streets is that pest of the Melbourne pastures the "Cape weed" (Cryptostemma calendulaceum), and on the cultivated patches the common Sorrel is very prevalent and troublesome. I was fortunate, just before leaving, in meeting with an old companion of Drummond, a man who also accompanied Muller on his short botanical trips in the district some four years ago. This elderly gentleman is a diligent collector of seeds in Western Australia, a close and tolerably systematic observer, and I was able to get seeds from him of most of the plants I had collected for my "Hortus Siccus." The richness of the district in plants adapted for garden decoration greatly surprised me, and I was still more surprised to find plants of which so little is known by cultivators in the other colonies. Doubtless most of them have been observed by botanists, but, strange to say, these have done but little towards diffusing a knowledge of valuable plants among the general community. If, instead of contenting themselves with the mere addition of a plant to their herbariums, botanical collectors would call the attention of nurserymen to the value of a new plant from a decorative point of view, they would secure such being sooner known by gardeners.

As matters are managed now, in Australia at least, half a century may elapse before the good qualities of the indigenous plants, and their value in ornamental gardening, become generally known by the public. Fully fifty plants of rare qualities, not one of which is to be met with in the gardens of Melbourne or Sydney, are to be found in the greatest abundance at Albany. It is just possible that a better knowledge of their value may prevail in Europe, and that there expensive appliances may be used to bring to perfection plants which in all the Australian colonies might be grown without the least trouble. It certainly is not creditable to the gardeners of Victoria, New South Wales, and Queensland that they should be almost totally unacquainted with them. W. C. C.

Seaside Plants.—Two valuable plants that will flourish even under the influence of the sea breeze and in the teeth of the wind are Veronicas Andersoni and decussata. These grow and flower where a Nettle would hardly live. I have seen plants of them at Southport, where there is very little but salt breezes and sand,—J. Williams.

THE FLOWER GARDEN.

VARIETY IN SMALL GARDENS.

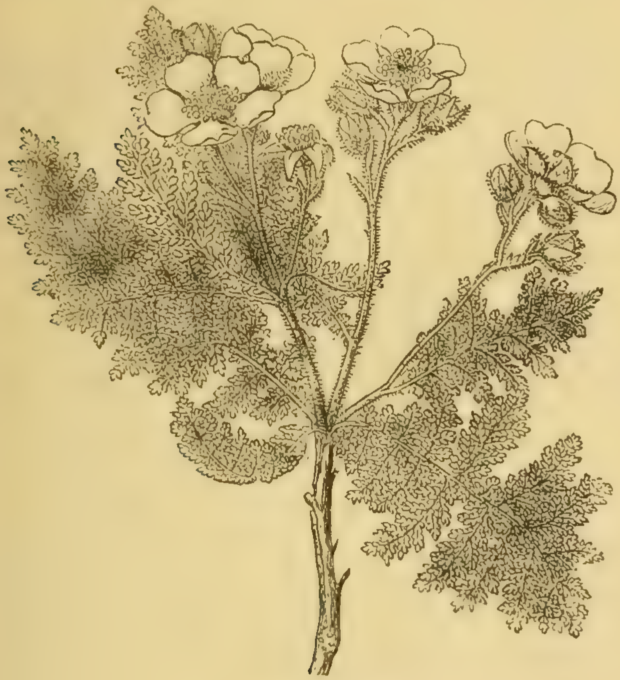
Amateur cultivators, who are not bound to the delusions of the bedding system, find exhaustless amusement in collecting representatives of various families of plants adapted to the means at their command for keeping and cultivating them. Where the bedding system reigns supreme, this is impossible, for greenhouses, frames, and nursery beds are all filled to overflowing with the monotonous round of subjects that are to be planted in May, that are to bloom in July, that are to be ragged in September, and that are to be housed in October, leaving the places they occupied empty and cold till May returns. Collecting allies horticultural recreations with botanical science, affords scope for the exercise of thought, and occasionally quickens inquiry and research; it instils into the mind a larger knowledge, and into the heart a warmer love of plants than is possible where the garden is kept as a place for a mere display of colour during three or four months of the year. It is next to impossible to avoid collecting when an interest has been created for certain forms of vegetation. The lover of Ferns is always in want of certain species and varieties; the cultivator of succulents, of bulbs, of hardy herbaceous plants, of choice trees and shrubs, finds that his possessions are so many keys to the vegetable kingdom, and at every advance of knowledge accomplished by their aid, he learns how many more interesting and beautiful plants there are in the world which he has not yet obtained, and which he would rejoice to possess. Collecting is, in fact, an exciting pursuit, and we sooner forgive a man for wasting his substance in riotous gardening, when this passion has seized him, than if he were under a Geranium or Verbena spell, revolving amid only half a dozen species of plants, and deriving no higher pleasure from his garden than repeating upon its surface the designs he is already tired of in carpets, chintzes, and wall-papers. For the public promenade, as for the great garden, where there is room for everything, and ample means to boot, good bedding is one of the necessities of the decorative part of horticulture; but in the small garden, which is like an extension of the drawing room, or a sort of outdoor parlour, something more is wanted than daubs of yellow and red, which—

> Like the borealis race,
> Flit ere you can point their place.

We want entertainment the whole year round, beauty for the eye, and with it fragrance, agreeable associations, variety, and something to engage and interest the mental faculty. In place of the scrubby evergreens that are tolerated, because the bedding, like the Dragon of Wantley, swallows up everything but itself, we ought to see in private gardens a considerable variety of the most beautiful shrubs and trees, deciduous and evergreen; the first so various in form and leafage, and many of them so magnificent when in flower; the second warm and rich in the depth of winter, making the place look like home, so that a glance from the windows neither chills nor repels, as must be the case when a person of any taste looks out upon a dreary parterre that is known to be of use only in the height of summer, when mere colour is least wanted, and when, in many cases, the family are away, and see nothing of it. And for summer and autumn, and even for winter, the hardy plants comprise myriads of fine subjects, some showy enough even for a vulgar taste, but many more beautiful in the true sense of the word, with grace of form and delicate harmonies of tintings, and characters so individual that one deserves to have a history, and to have that history told to all admirers. And when winter comes again, the variegated leaved and berry-bearing shrubs that are within the reach of English cultivators would suffice to effect an apparent change of climate. It is enough for us to be frozen to-day and roasted to-morrow in this wayward, changeable, ungenial, unfriendly clime; we need not make our gardens lugubrious to increase the horror. Yet this we do, and only at rare intervals do we meet with examples of what English gardens might be in warmth, cheerfulness, richness, and variety even in the very depth of winter. F.

CHAMÆBATIA FOLIOLOSA.

This unique little shrub, so remarkable for the Fern-like beauty of its leaves, belongs to the Rose order, and in a wild state occurs naturally in the hill country of California, where it quite covers the ground, and is named Tarweed by the settlers. This name is given in consequence of the powerful and somewhat disagreeable odour given off by the plant when touched or walked upon, and which is very apparent in the air where the plant is common. It is seldom seen above a foot high, forming, however, a dense shrubby turf, spreading everywhere under the great trees. This, however, does not prove it to be a shade-loving plant, as the tops of the high Pines are so compact that the sun frequently plays freely on the dwarfer vegetation. In further explanation of this, it may be mentioned that very frequently on the Sierras the pines are dotted about in an open manner quite different from what is the rule in the Pine woods of Europe and the eastern side of America. The Tarweed is sometimes, though not often, seen in English stoves and greenhouses. My object in directing attention to it now is to point out the probability of its succeeding out of doors in the rock-garden or in favoured positions on well-drained banks. I have seen it growing abundantly in places where there were sharp frost and snow early in November, and where it must have endured much cold in winter. In trying it out of doors, as sunny a position as possible should be given to it, and it should be planted in well-drained sandy loam. R.



Chamæbatia foliolosa.

PRIMROSES.

SOME twelve or fourteen years ago, when residing in a distant county upon the table land of England, I had a beautiful collection of varieties of the common Primrose, and when I speak of varieties it will be seen I mean something more than did the person described by one of our popular poets, who to denote his want of feeling said :—

> " A Primrose by the river's brim
> A yellow Primrose was to him,
> And it was nothing more."

But mine were " something more," for though but a simple Primrose the scale of colour ran from pure white to bright crimson, with all the varied shades of purple, rose colour, lilac, mauve, and some of the neutral tints. However, they were all beautiful. Leaving the locality at the time when the Primroses had died down I had no means of securing them, and since then the mansion has been burned down, and the gardens have fallen into decay. Writing, however, a short time back to an old friend in the neighbourhood, I mentioned incidentally these Primroses, and, giving him " a clue to their secret hiding place " in one of the woods, he has rewarded me by sending a collection of the flowers. It is surprising out of what simple materials really gay and beautiful bouquets may be formed. These flowers now standing before me in a glass dish would grace the boudoir of an empress. At present the plants are a mere *omnium gatherum*, a mixed mass of colours, but when put under proper training, and another season they are massed either in straight lines or consecutive circles of well-contrasted colours, they will create quite a new feature in the flower garden, and become the admired of all admirers. By what wild freak of nature the " Primrose pale " was lured from the path of colour-constancy I cannot imagine, but it is quite certain that she has been coquetting with some ruddy complexioned gentleman, and whether that may have been a bit of stray pollen from the double red, crimson, or lilac Primrose I cannot tell, or whether with the aid of the bees she has borrowed a blush or two from the Chinese Primula, Auricula, or Polyanthus, matters not; we have got the colour and now we must intensify and vary it as much as possible. The varieties now before me, picked up at random, are sufficiently defined :—crimson, deep rose, rose, lilac, mauve, dove colour, white, and yellow. Many intermediate colours might be named by those who are inclined to hair-splitting in the manufacture of varieties, but I am content with a few well defined colours, and those I have enumerated might be very effectively grouped, especially if liberally intermixed with the white or yellow varieties. Primroses cannot be classed amongst the ephemera of spring, for though, under favourable circumstances, early in the development of their flowers, they continue for a long time to give a succession of blossoms. Plants of the common kind which with me were blooming in November are blooming still, and no doubt the coloured varieties will do the same. These varieties alone would make a spring garden quite gay, but when we come to look to the varieties of Polyanthus, Oxlip, Auricula, especially the lovely Alpine ones, and the innumerable species and varieties from temperate as well as from the coldest parts of the world—from the inhospitable wilds of Siberia to Egypt and the Himalaya mountains, we find a variety of colours and elegance of form peculiarly suited to the purposes of the decorative gardener. Most of them are of simple culture, and by division of the root and by seed they may be increased almost indefinitely. What a wide field this family opens to the hybridist. With comparatively limited means the Cyclamen, under the persevering intelligence of Mr. Atkins and the Messrs. Henderson and Son, has yielded a rich harvest of beautiful forms and colours, and no doubt the Primula would repay similar attention. I can conceive no more agreeable employment for an amateur, either lady or gentleman, than that of raising varieties of these beautiful plants. A collection of the kinds, a small frame and a camel's hair pencil is all that is required. Watch the flowers daily and when in a fit state, that is full grown, impregnate them by transferring with the hair pencil the pollen of one species or variety to the stigma of another; watch narrowly for the seed, and when it is ripe sow it immediately, and every year you may have hundreds of young plants to bloom; and with this certainty that all will be beautiful if not distinct and new.

W. P.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Monthly Roses.—A few days ago I saw ten or twelve lovely peach-coloured buds on a plant of the old monthly Rose, and a much larger number of buds not so far advanced. The plant in question was growing in a sunny corner, and almost made one forget that we are so near mid-winter. This now somewhat neglected old plant will well repay any one who may give it a sheltered nook and a few minutes' cultural attention once or twice during the season.—F. W. B.

Sporting of Bouvardias.—Bouvardias are among the most valuable and pretty of our winter-blooming plants, as their small, delicate flowers seem never to be out of place in any style of basket, wreath, or bouquet. Scarlet varieties and species were formerly the most common; but within the past few years several new white varieties have been introduced, the two most valuable sorts having originated in America, and being known as Bouvardia Davisonii and B. Vreelandii. Neither of these were raised from seed, but are what are called "sports" of the B. Hogarth, a well-known scarlet variety or species.

Winter Flowers.—Cyclamen coum opened its blooms with me on New Year's Day, as did also the Christmas Rose. The Cyclamen has bloomed four years with me, twice opening on New Year's Day, once on the 8th of the month, and once on the 12th. Some assert that Cyclamens when at rest require to be kept dry, but as this plant grows above the roots of a Clematis Jackmanii, which receives large doses of liquid manure when the Cyclamen is at rest, the dry theory must be wrong, as also must the system of planting the corms upon the surface. I must also add Eranthis hyemalis to my list of New Year's Day flowers.—G.

THE FRUIT GARDEN.

THE HOME OF THE APPLE TREE.

THE unchanging character of the Crab, the reputed parent of the fruit which we call the Apple, and the constancy with which it produces its excessively sour and unpalatable fruit in this country, perhaps justifies the following inquiry put forward by Mr. Pearson, as to the origin of our cultivated varieties of Pyrus Malus, and gives some show of reason for the doubt which he expresses as to the general accuracy of the received opinion that the Crab is the immediate parent of the Apple.

"Where did our eating Apples come from?" says Mr. Pearson. "I am not Darwinite enough to believe our Ribston Pippin ever came from the Crab of our hedges, any more than I believe that our editors had monkeys for their ancestors. George Chaworth Musters mentions in 'Travels in Patagonia,' large woods of Apple trees which the Indians visited every year to gather the fruit. These are spoken of as far distant from any settlements of the Europeans. Then, again, Adams, in his 'Wanderings of a Naturalist in India,' writes of the Apples, Apricots, Walnuts, &c., of Cashmere, as if he had found them at home. In spite of the antiquity of cultivated Apples, one often sees writers take it for granted that the hedge Crab improved is the source of all our varieties of this useful fruit. Why do they not talk of the time when our cats were tigers? What is the history, as far as known, of our cultivated Apples?"

Alph. de Candolle, in "Geographie Botanique raisonnée," says that Pyrus Malus, the source apparently of all the varieties of our Apples—sour and sweet, grows in temperate Europe and in the region of the Caucasus. The Romans and Greeks cultivated several varieties under the name of Malum. The word Pomum was applied in Latin to all fruits, round or fleshy. The name Pomme d'Api comes probably from the variety Appiana introduced by Appius, according to Pliny.

The names of the Apple differ less from one another in the ancient languages of Europe than those of the Pear. This makes us suspect a primitive country, less extensive than that occupied by the Pear, varieties less numerous, and a culture transmitted from people to people by imitation, rather than the finding of wild Apples in different countries. The root of almost all the names is ab, ap, al, ar, af. The Tartars, Hungarians, and Turks call the Apple alma; the Bretons call it aval, avalen; the Gauls, afalen; the Germans, apfel; the Russians, jablon; the Poles, gablon; the Latins, malum; the inhabitants of Biscay, sagara.

The Apple is cultivated in the north of China, in the north of India, and more commonly in the Vale of Cashmere, and the neighbouring country. The Sanscrit name of the Apple is Seba, which is not very far from European names, amongst others the Basque. The Arab name Tufa, and above all, the Chinese name Pim Po, are very different. Thunberg does not indicate the Apple as being in Japan, and this makes me presume it is not ancient in China. From researches thus pursued through the records of the various civilised races of Europe and Asia it seems that an edible fruit identical with our Apple was in existence at remotely historical periods. Fruits, such as the Apple and Pear, Plum and Cherry, ameliorated and improved by the cultural skill and care of races of whose civilisation we know nothing, but that they had achieved a certain amount of success in the cultivation of fruits, and that some of these fruits developed into the form and quality that even now belongs to them, were obtained by the Greeks and Romans, from people who were to them ancient and mysterious, and were cultivated, improved, and finally distributed throughout the continent of Europe by the great colonisers and conquerors who flourished 2,000 years ago. The Romans were doubtless the first to distribute the hardy fruit trees familiar to them throughout their western dependencies. The strong botanical affinity existing between the wild and cultivated form of Pyrus Malus may justify the assumption of consanguinity generally entertained; but the obdurate and persistent acerbity of the wild Crab of Britain not unnaturally provokes the question of ancestry, and many find it hard to admit the close relationship of the sweet rosy Apple with the small green sour Crab. The explanation, however, may be found in the fact of the variable constitution and production of a fruit tree exposed to different climatic influences. We know in our cultural experiments with any fruit how much the development of its best qualities depends on conditions of climate, and a Crab on the sunny slopes of the Caucasus or other favoured situations may have yielded more readily to the cultural cares of man than the same tree would have done in England. It seems not improbable that a form of Pyrus Malus, modified by the influence of a climate favouring the development of the saccharine element in the fruit, was the parent of the great family of Apples now spread throughout the temperate regions of the earth.

Belvoir. WILLIAM INGRAM.

CULTURE OF THE APPLE AND THE PEAR.

WHEN grown as standards on the natural stock, both the Apple and Pear delight in a deep, strong loam. Three feet of such a soil, thoroughly well drained, is not too much, and at least 2 feet should be secured before planting, if permanent and satisfactory results are expected; therefore, where the soil is naturally shallow and the subsoil bad, the ground should be broken up and trenched to that depth, either removing the subsoil altogether to the necessary depth, and making up with fresh loam or good soil, or incorporating it well with the top soil in trenching, if it is not actually of a deleterious character. Manure may be applied after planting in the form of mulchings, with great advantage; but it is not advisable to trench it into the ground unless the soil is poor and light, in which case cow-dung is the best and most lasting manure that can be used. On the other hand, when the soil is stiff and tenacious, it should be meliorated with plenty of leaf soil or decayed vegetable refuse of any kind, and sand; but good loamy soil—not necessarily turfy—is, as a rule, the best restorative that can be applied. In wet situations draining is of the highest importance, but in dry localities it is sometimes not needful at all; circumstances must be the guide in such cases. Standards are generally planted from 20 to 35 or 40 feet apart each way, according as they are likely to make a luxuriant growth or otherwise, but 30 feet will be found a suitable distance for permanent trees; and it is not a bad plan to plant between with supernumeraries, which allows a greater variety to be planted, and those which are found to suit the locality best can be retained, and the others removed when the trees get crowded after a few years. In orchards of small extent, Apples on the English Paradise stock should be chosen, and the trees may be planted half the above distance apart. Trees with clean, straight stems, and such as show a disposition to grow freely, should be selected; and, though it is better to plant as early in autumn as possible, they may be planted any time between the fall of the leaf and the breaking of the buds in spring, when the weather is open and moist. With the exception of thinning out the shoots when too crowded, and shortening back such as are getting too much ahead of the others, so as to secure a round and well-shaped head, the less standards are pruned the better. The oftener the knife is used the oftener it will be required, while less fruit will be the result, and root-pruning will be a periodical necessity.

PYRAMIDS.

As it is in every way better for those who contemplate planting these to buy established trees, rather than attempt to originate them from the beginning, I will say nothing about training from the maiden tree. Nice trees, already trained into rudimentary shape, can be had from any respectable nurseryman cheaper and better than they can be got up by the amateur himself. When the Apple and Pear are grown as pyramids on the Crab or Pear stock, they require a considerable amount of attention in the way of summer pinching and root-pruning to restrain their vigour and to secure a fruitful habit. The most fruitful trees of this kind I ever saw were trained as pendulous pyramids—perhaps the best form of training; but it should not be attempted unless it can be carried out systematically and well, for trees once trained in this way, and afterwards neglected, are unsightly objects. Where the pendulous form is adopted, the following directions must be attended to:—Assuming that we have a fairly pyramidal-shaped young tree—that is, with a straight central stem, furnished regularly with shoots from within one foot of the ground to the top—to begin with, it should be encircled at about 6 or 8 inches from the ground with a hoop of iron wire, fastened with staples to the tops of short oak posts driven into the ground for that purpose, at equal distances apart round the tree. The lower shoots of the tree should then be tied down regularly by their points to the wire; the second tier of shoots should be tied in the same way to the first; the third to the second; and so on to the top of the tree. The advantages of this form of training are that it checks the vigour of the tree, and induces the formation of fruit buds along the pendulous shoots, instead of a luxuriant growth of wood, such as upright-trained trees are disposed to make. A fruitful disposition must also be encouraged by not tying in too many shoots, allowing such as are retained to extend in length till the tree has attained the desired circumference, and by pinching assiduously during the summer, to two or three leaves, all laterals that push from the pendulous shoots; in fact, each shoot, if properly cared for, should be like a little cordon growing out from the stem of the tree. If pinching and thinning have been regularly attended to during the summer, little pruning will be required in winter; but the trees should be gone over, and such spurs as have been left too long should be shortened back, and the branches regulated and tied down. Such trees also as seem to be growing too luxuriantly should be root-pruned. About the end of October is the best time for this, and the operation is performed by cutting a trench round the tree about 3 or 4 feet from the stem, according to the age and vigour of the tree, and cutting off all roots that extend beyond that distance, and such as are going down into the subsoil. Indeed, the soil should be removed sufficiently to allow the spade to be pushed right under the ball of the tree from all sides. My own practice is to lift about one-third of all our pyramids every autumn; in this way they are all lifted over in three years. Mulching summer and winter should also be practised regularly. These remarks, it will be seen, refer to trees grafted on the natural stock, and so far as relates to pruning, pinching, and root-pruning, they apply also to upright-trained or natural pyramids. In these the object is also to secure and retain a straight central stem, to have it well furnished with branches from the base, and by systematic pinching and pruning to keep the tree as nearly in the form of a cone as possible. With upright pyramids, however, it is not the practice to allow the leading shoots to extend at the same rate as when they are trained in the pendulous form, but to pinch them the first time during the summer to 8 or 9 inches, the next time to 3 or 4 inches, less the third time, and so on. The side shoots or laterals may be pinched the first time to 3 or 4 inches, and proportionally shorter afterwards.

PYRAMIDS ON THE QUINCE AND PARADISE STOCKS.

The object of grafting the Apple upon the Paradise Stock and the Pear upon the Quince is to secure a dwarf habit, early maturity, and quick returns. Both stocks being shallow rooters, they are also adapted for planting on thin soils, where, if the Pear stock was used, the roots would be sure to penetrate the subsoil, and failure, partial or altogether, would be the result. The Pear is disposed also to make a too vigorous growth in wet and late situations, particularly in deep, retentive soils; hence the value of the Quince or Paradise stocks under such circumstances. Otherwise, in moderately deep and healthy soils, the Pear is the most natural and best stock for the Pear in every respect, if attention in the way of root-pruning, pinching, &c., is given. The treatment of pyramids on the dwarf stock differs from what I have already recommended for those on the natural stock in the matter of root treatment only; for, while the roots of the Pear and the Crab need to be kept within bounds by constant cutting and lifting, those of the Quince and Paradise require to be as constantly encouraged to grow by surface dressings and mulching. The ground should not on any account be dug about the roots of the trees, but annually top-dressed with rich soil, taking care always that the graft is not buried in so doing.

ESPALIERS.

This is a very excellent way of training the Apple and Pear, and is perhaps the best plan that can be adopted when fruit trees are grown round the kitchen garden quarters. Espaliers bear better than standards, occupy less space, and interfere but little with the cropping of the ground with vegetables. Referring your readers to your advertising pages for information regarding the erection and construction of espalier fences, only premising that the wires are stretched about 8 inches apart, I will at once speak of the mode of training, which is perfectly simple. For espalier training it is best to begin with maiden trees, that is, young trees with only one shoot to them. These should be planted against the wires 20 feet apart, and be cut down to about 2 inches below the bottom wire. In spring three or four shoots will spring from below the cut; the highest should be trained straight up, and two of the remaining strongest and most conveniently placed should be trained horizontally along the bottom wire, on each side of the stem, and the other shoots, if any, may be cut clean away. The central shoot, which will be inclined to grow the strongest, should be stopped at the height of 18 inches or so, in order to throw the sap into the two horizontal shoots, which cannot be encouraged to grow too much. At the winter pruning they should be left entire if they ripened to their extremities, and the central shoot must be cut down, this time to the second wire, which will leave the tree at the end of the first year with two well grown side shoots only, and a central shoot about 8 inches high. This will break the second year again below the cut, and furnish limbs on each side, which must be trained right and left, the same way as before, to the second wires, and the leader taken up and stopped again; and this process must be repeated until the top wire is reached, which, supposing the fence to be 5 feet high, will take about seven years. But by that time the trees will have extended horizontally to at least double their height, and borne several crops of fruit. The only other attention the trees will require is pinching back the lateral shoots that grow from the horizontal limbs to two or three joints, in order to induce the formation of fruit buds, and to keep the same within proper bounds by shortening the spurs judiciously at the winter pruning, taking care always to cut back to a bud, and to secure generally an even and well furnished limb. The different varieties of the Apple and Pear vary so much in different localities—sometimes one sort succeeding as a standard and espalier at one place, and perhaps requiring a wall at another not far distant; here doing best on the Quince and Paradise, and there on the Pear and Crab—that I do not think it advisable to append a list of kinds for general cultivation, but would advise those who contemplate planting to ascertain at some good garden in their own neighbourhood what sorts are found to do best. A little pains taken in this way at the outset will repay the trouble. J. S.

AMERICAN BLACKBERRIES IN ENGLAND.

At last these remarkable fruits have had a little attention from one of our best gardeners. "For the last two years," writes Mr. Tillery, in the *Florist and Pomologist*, "I have grown great crops of Lawton American Blackberry, and find it to make a capital preserve when mixed with a few Apples to take off the sweetness. Wet seasons like the present seem to suit it best, for the bushes are loaded with fruit of a far larger and firmer consistence in flesh, and of a better flavour than the common English Blackberry. I believe there are many varieties of the American Blackberries, but the Lawton is the only one I have yet cultivated. I grow the plants of it in rows, like Raspberries, selecting two or three of the strongest shoots made in the summer, and after cutting away the fruiting canes when they have done bearing in the autumn, the young shoots are tied up to stakes placed in a slanting position, like Raspberry stakes. The stakes, however, must be longer than for Raspberries, for this Blackberry is a very strong, rampant grower, like many of the English sorts, and the more room it has the larger will be the growth. The soil it does well on here is very strong, with a clay subsoil, but I should think any soil would suit the plants, if they were well watered in dry summers during the flowering time. There being a great paucity of fruit this year for the blackbirds and thrushes, I expected they would have commenced their raids upon this Blackberry as soon as it was ripe, but they seem to let it alone, and confine their attention to the rows of the autumn-fruiting Raspberries growing in the same quarter of the garden. The first year I fruited this Blackberry I saved some of the fruit for seed; and having raised some young plants, I have distributed and planted them in some of the hedge-rows and plantations about, so that they will very likely multiply and replenish the Blackberry-pickers' baskets with their fruit. The Lawton Blackberry is very distinct in its foliage from ours, its leaves being more laciniated, and of a deeper green colour, and keep nearly so all through the winter."

KEEPING FRUIT.

A few principles are important in keping fruit, particularly Apples. The first is coolness of temperature. If too warm, they (the Apples) will mature—so that temperature is the important thing. Keep as cool as possible for long keeping. A little frost, gradually let out, does not seem to hurt. A low, uniform temperature, say at 40° or a little below, just avoiding the frost, is all that is wanted in the line of temperature, so far as Apples are concerned, and other fruit comes under the same general head. It is no difficulty to keep this point in the winter, only be sure and have your cellar or fruit-room warm enough to withstand the heaviest cold. If in the warm days there is a tendency to too much warmth open the windows or doors, do not neglect them. The next great consideration—and it is almost equally great with the first—is, the hygrometric condition. If too moist, you may be sure your fruit will rot—will mould. If too dry, it will shrink—that is, lose its moisture—and this is almost as bad as rotting. Much can be done by regulation here, even if the apartment is inclined to one or the other extreme. Where there is much moisture, open bins will keep your fruit either from rotting or shrinking. So will open barrels where there is less moisture; they require a drier atmosphere, as they are more confined. Closed tight in a damp room, they are sure to spoil: we have known them to be a sunken mass of rot and mould. If the air is quite dry, the barrel is the thing, either shut tight or merely covered over. We have known Spitzenbergs to come out in April, headed close, almost in the same condition as they went in. They were more matured, and were highly coloured. These were headed up in the autumn and put into the cellar, a dry one, and left there till April untouched. Growing rank and watery (in a wet season) fruit will not keep so well, and the winters are sometimes more moist. Where there is a condition neither too wet nor too dry—that is, not known for its extreme—this is what is wanted, and most cellars are of this kind. It is therefore in general safe to trust Apples to barrels, covered up, whether absolutely tight or with a little air circulating. We prefer the latter as a general thing. We usually let our fruit sweat in outbuildings before we store it for winter. This is at least a safe plan, and therefore we practise it. There would be more uniformity of temperature and moisture were it immediately taken to the cellar, but the sweating which would follow would be long and profuse. Never touch fruit after it is put in its winter quarters. If it is "bound to rot," as seems to be the case with some people's fruit, why it will rot—and it will rot the faster, and much faster, if you try to save it by sorting, but particularly by wiping also. This removes the coat (an oily covering), which is a protection, and a decided one—one nature seems to have provided for that purpose. In the spring sound fruit treated in this way is sure to last but a little while. When once rot has set in, the fruit should be used at once, what is good of it, but handle no faster than you use it.—*Cultivator.*

The "Apple Cure."—It appears, from the *New York Tribune* that the best food for animals is Apples. Two cows in an advanced stage of illness have, it is stated, been entirely cured by Apples. A horse, given over by veterinary surgeons, and turned out in a field to die, got access to an Apple tree, ate what he wanted, and immediately showed signs of improved health. His owner, acting on the hint, fed the beast daily on a peck of Apples, and in a week "you couldn't have bought that horse for 100 dollars." Three cows were seen tied up in a barn "mourning for something." They were given half a bushel of Apples, which they eagerly consumed, and, ceasing their lamentations, took peaceably to their hay. Some interesting experiments to test the value of Apples for milch cows have also been made, and been entirely successful. The *Courant*, an American paper, says that "a large cow, something along in years," feeding exclusively on summer pasture, and producing four wine quarts daily, was, on the 1st of August, put on a diet of four quarts of Apples night and morning. The quantity was increased until, at the end of a week, she was eating a bushel of the hardest, sourest windfall Apples each day. Such was the effect of the Apples as to bring her produce of milk from four quarts to rather more than six quarts per diem. Another cow, by means of half a bushel of Apples night and morning, was induced to give a daily yield of twelve to fourteen quarts of milk. Similar experiments with other cows produced like happy results, and although in this country we have not Apples enough to make dumplings for ourselves, yet this plan of feeding cattle with Apples, and curing them of disease with that diet, is well worth the attention of rich owners of stock, to whom a heavy greengrocer's bill is a trifle; and young veterinary surgeons, who are at a loss for novelties, might make fortunes by starting the "Apple cure."

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Standard Currants.—In the fine old kitchen garden at Wollaton Hall, Notts, there are some fine specimens of standard Currants. The stocks are some 3 or 4 feet high, and I have seen them heavily laden with fruit of fine quality. They are very ornamental in appearance, and do not take up the space required by dwarf bushes of equal productiveness. When grown in this manner the borders below them can be planted with Lettuce, Endive, or other small salading. This method of growing bush fruit is peculiarly adapted to villa gardens, where space has to be made the most of.—F. W. B.

Pears and Plums for a North Wall.—Will you be so good as to give me the name of two or three Pears that would succeed on a north wall.—Tyro, *Oxford.* [As regards Pears succeeding on a north wall, a great deal depends on the season. In warm summers I have grown Beurré d'Amanlis for an early variety, Louise Bonne for mid season, and Winter Nelis for a late sort, with success, and their flavour has been good. Beurré Diel has succeeded with me and borne good crops even in bad seasons, which, if not fit for dessert, did very well for stewing. I should, however, advise "Tyro" to plant a tree or two of Coe's Golden-drop Plum on his north wall, for I find it higher flavoured when grown on that aspect than on any other.—William Tillery, *Welbeck.*]

THE ARBORETUM.

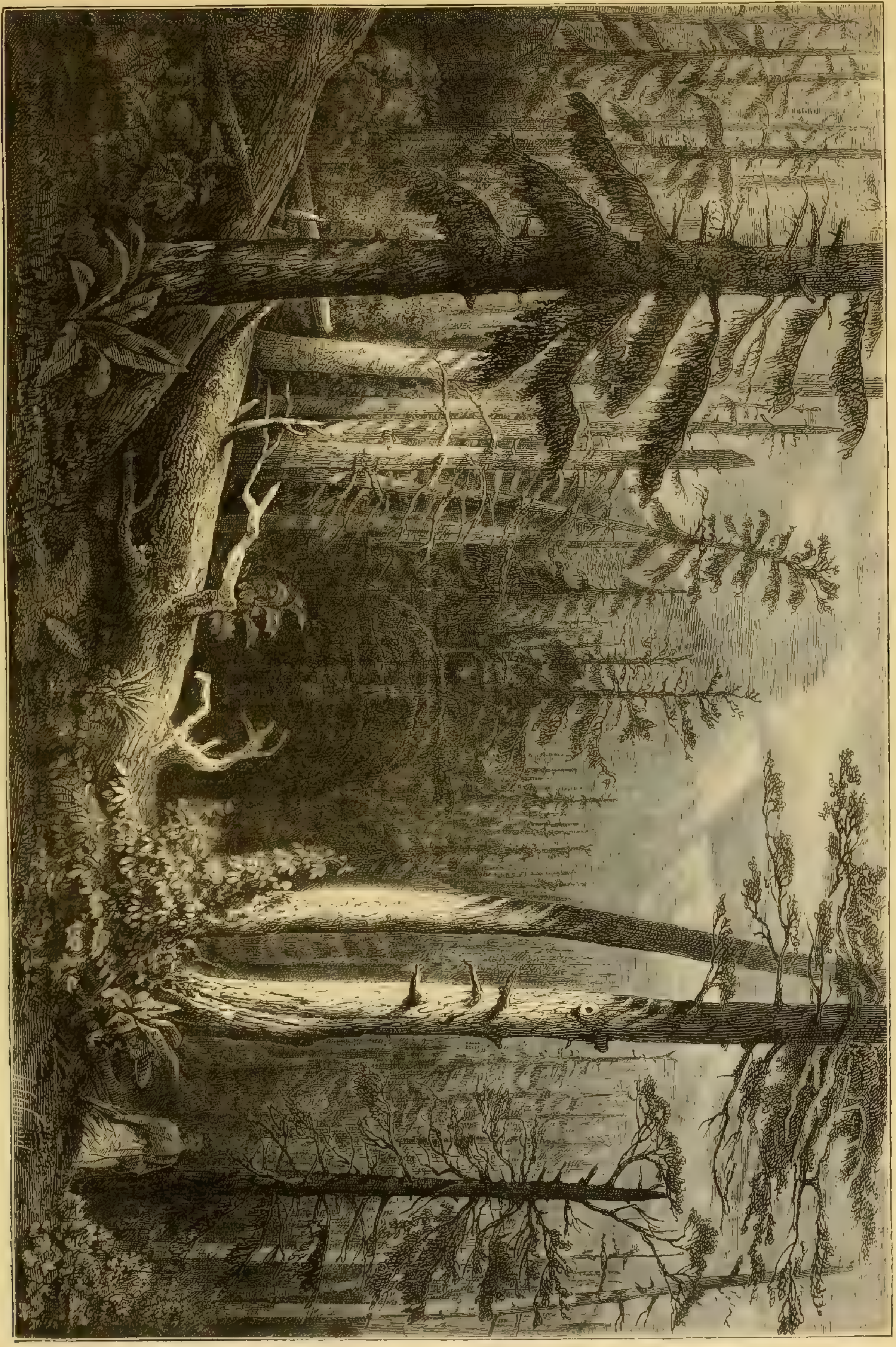
FOREST SCENERY IN BRITISH COLUMBIA.

Most people know that British Columbia is the country of the Douglas Fir, where that giant of the forest reaches its highest stage of development, rushing up to the amazing height of 250 or 300 feet. With us it sends out vast arms from the trunk, stretching far out on every side; there the branches are so short and closely packed in by surrounding trees that nothing but a close stifled congregation of stems is seen, with the foliage high up in the heavens, excluding the light and casting a deep gloom over the sunless vegetable mould in which the trees grow. In fact the common saying "one cannot see wood for trees" is literally true of such a scene so hemmed in is one by them on every side. But there is another aspect of these forests which is equally frequent and equally characteristic. One of the qualities of the Douglas Fir is that its timber forms excellent firewood even when green, and in dead trees the bark and wood are often so full of resin as to burn like a torch. Owing to this combustibility extensive forests of this tree get burned every year, taking fire from various causes. No doubt they often take fire from mere friction of the dead branches caused by the wind. Still oftener the carelessness of the Indians or white men originate them by leaving their camp fires unextinguished, not to speak of occasions on which for the most trifling causes the Indians originate them purposely and recklessly; lightning too adds to the number, and the volcanoes in some parts of the country (Mount Saint Helens and Mount Rainier), when in action devastate whole tracts in their vicinity by the burning ashes which they eject. When the Pacific Railroad exploratory party made its ascent of the Cascade range they passed for days through dead forests, which they supposed might have been burnt by ignition from this cause several years before; but large tracts were on fire at the same time, filling the air with smoke, so that they could not see the surrounding country for several days.

Similar scenes occur, from one cause or other, in all the great forests of Oregon, Washington County, and British Columbia. One who has seen them thus describes one of these fires:—"It is one of the grandest sights by night to watch the progress of the fearful element through the close-grown trees; the hissing of the flames enveloping the green limbs, the crashing of falling logs, and the clouds of belching smoke that darken the star-lit sky, the lurid glare and fitful light, in which the outlines of the hills and woods are seen starting from obscurity into view to sink again into thicker darkness. These, with all the minor concomitants of such a scene, make an impression on the mind which can never be effaced." The forest, long after the fires have been extinguished, wears a burnt aspect; but by-and-by nature reasserts her power. The dead trees fall, and they are succeeded by a growth of young trees, which rapidly rise to replace the old.

It might be thought that, however great the fertility of nature, and how unbounded soever her resources in that exceptionally favoured region, she could never keep pace with such constantly recurring destruction—where the growth of centuries is consumed in a few days or weeks—and it is undoubted, now, when the white man is one of the factors, that the end of these magnificent forests must come, and that these fires will bear their share in hastening on the event—but it is yet distant. The vast extent of these forests will yet bear a great deal of burning without its making any perceptible effect upon them. There is this important difference between the fires which take place in the forests in British Columbia and Oregon and those which occur in the prairies, and which run on for hundreds of miles in a straight line, that they are located in districts which are much intersected by mountains and streams; and though terrible in appearance, they are always circumscribed in extent, as the mountain spurs and jutting rocks, with the windings of the streams, form impassable checks to the most furious fire. The scene shown in the accompanying cut occurs towards the higher portion of a mountain, where the trees suffer more from fierce winds and cold than they do on the foot-hills or low grounds.

A. M.



FOREST SCENE IN BRITISH COLUMBIA.

CONIFERS FOR GENERAL PLANTING.

Is there any valid reason why such a goodly number of the Conifers introduced of late years should be regarded as subjects only for the patch of dressed ground, and the immediate vicinity of the house, and be altogether ignored in the calculations of the general planter? We trow not. On the contrary, we are of opinion that many of them now sheltered and coddled, and fed with dainty pabulum, would find themselves much more at home if, instead of as domestic pets, they were treated as *feræ naturæ*, and allowed to take their place with the ordinary forest trees and their kindred Larch and Spruce, Scotch and Silver Firs, on moorland and mountain, hill and brae-side, glen and valley. In fact, it is only when they cease to be toys with the suburban amateur, who plants the giant Wellingtonia or the equally gigantic Sequoia, &c., in the expanse of turf some 10 or 12 feet square before his hall door, and when they are no longer looked upon by our country residents as merely ornamental evergreens, expensive to buy, troublesome to care, only to be sparsely dotted here and there in dainty spots about their dwellings, and form a percentage of all general plantings, that we shall get a true notion of their likes and dislikes, their marvellous development and economic value. Such of our readers as take an interest in planting, or know anything of tree lore, need not be told that but few of our ordinary forest trees are racy of the soil, or that the majority are aliens, and that, therefore, it may fairly be expected that at no distant day many of the recently introduced Conifers will, too, form no inconsiderable percentage of our woods and plantations. The rapidity of growth and timber-producing powers of many of the species recommend them strongly to the notice of any one about to plant, either with a view to effect, shelter, or profit. The impression above alluded to, as well as that of fancied scarcity and high prices, act as deterrents and prevent many from even thinking of them who would set seriously about planting them if these impressions and fancies were once removed.—*Farmers' Gazette.*

FORESTS AND RAIN.

A late number of *Nature* contained some clear and sensible observations on this subject, on which so much doubtful matter has been written. To what extent the climate of any portion of the surface of the earth can be changed by human labour is still an open question. Certain districts of the globe we are accustomed to look upon as condemned by Nature to perpetual sterility. The arid deserts of Africa and Central Asia, the frozen realms of Siberia, appear as if predestined to a gloomy lifeless solitude. To reclaim them to human control and human habitation may be one of the problems of the future. That climates have changed materially within recent times, we know as a historic fact. Macaulay has made us familiar with the damp fogs and perpetual rain-clouds with which our island was invested during the period preceding the arrival of the Danes and the Saxons. Much of the amelioration of climate which has since taken place is doubtless due to the increased cultivation of the land, and the extent to which the fen districts have been drained; but the main agent has probably been the destruction of the forests which then clothed a large portion of the island. The mode in which forests act in increasing the amount of moisture in the atmosphere is much misunderstood. Even in an article which recently appeared in the pages of so well-informed a journal as the *Pall Mall Gazette*, it is affirmed that this effect is due to the attraction exercised by trees on the rain-clouds. The principle by which trees act in effecting this is, however, at least mainly, by acting as pumps in drawing up the superfluous moisture from the soil. The most trustworthy experiments show that, under normal circumstances, plants have no power of absorbing through their leaves water, either in the fluid or gaseous state; their supplies are obtained entirely through their roots; and the superfluous moisture is evaporated from the leaves. The amount of aqueous vapour thus delivered into the atmosphere by vegetation is enormous, and has been the subject of careful investigations by French and German botanists. Von Pettenkofer recently detailed some experiments on the amount of evaporation from an Oak tree, made during the whole period of its summer growth. He found the amount to increase from May to July, and then decrease till October. The number of leaves on the tree he estimates at 751,592, and the total amount of evaporation in the year at 539·16 centimetres of water. The average depth of rainfall for the same period on the area covered by the Oak tree would be only 65 centimetres; the amount of evaporation is thus 8½ times more than that of the rainfall. The excess must be drawn up by the roots from a great depth; and thus trees prevent the gradual drying of a climate, by restoring to the air the moisture which would otherwise be carried to the sea by streams and rivers. The immediate result, therefore, of the diminution of forests in a thickly-wooded country will be to increase the proportion of the annual rainfall that is carried to the sea by the natural drainage of the country, and proportionately to decrease the amount returned insensibly to the atmosphere, which then condenses into rain and cloud. Within certain limits it is obvious that this must be an unmixed good; but as the country becomes more and more thickly populated, and the land more valuable for habitation or culture, the danger rather lies in the other extreme, that the country will become so denuded of forests as to render the climate too dry for the profitable pursuit of agriculture. This has, in fact, taken place of late years to so great an extent as to demand the most serious attention.

PLANTING TREES.

The inducements to create property by tree-planting are so many and so powerful, that, to the greater part of those who possess the means, little, I hope, need be said to urge them to the employing of those means. Occasions enough will offer for showing how quickly the profits come. But, still there are some persons, who possess such means, who are well assured of the ultimate gain, but who are, nevertheless, discouraged by the thought that they shall not live to see the actual pecuniary product of their undertaking, and who, according to the idea of that dismal moralist, Dr. Johnson, begin to think of dying when they are exhorted to plant a tree. Let all such attend to the lesson given them in La Fontaine's beautiful Fable of the "Old Man and the Three Young Men," the wise, the generous, the noble sentiments of which ought to be implanted in every human breast.

Un octogénaire plantoit.
Passe encor de *batir*; mais *planter* à cet âge.
Disoient trois jouvenceaux, enfants du voisinage
Assurément il radotoit.
Car, au nom des dieux, je vous prie.
Quel fruit de ce labeur pouvez-vous recueillir?
Autant qu'un patriarche il vous faudroit vieillir.
A quoi bon charger votre vie
Des soins d'un avenir qui n'est pas fait pour vous?
Ne songez désormais qu'à vos erreurs passées.
Quittez le long espoir et les vastes pensées;
Tout cela ne convient qu'à nous.
Il ne convient pas à vous-mêmes,
Repartit le vieillard. Tout établissement
Vient tard et dure peu. La main des Parques blêmes
De vos jours et des miens se joue également.
Nos termes sont pareils par leur courte durée.
Qui de nous des clartés de la voûte azurée
Doit jouïr le dernier? Est-il aucun moment
Qui vous puisse assurer d'un second seulement?
Mes arriere-neveux me devront cet ombrage:
Hé bien! défendez-vous au sage
De se donner des soins pour le plaisir d'autrui?
Cela même est un fruit que je goûte aujourd'hui:
J'en puis jouïr demain, et quelques jours encore;
Je puis enfin compter l'aurore
Plus d'une fois sur vos tombeaux.
Le vieillard eut raison: l'un des trois jouvenceaux
Se noya dès le port, allant à l'Amérique;
L'autre, afin de monter aux grandes dignités,
Dans les emplois de Mars servant la république,
Par un coup imprévu vit ses jours emportés;
Le troisieme tomba d'un arbre
Que lui-même il voulut enter:
Et pleurés du vieillard, il grava sur leur marbre
Ce que je viens de raconter.

To translate this is like an attempt to make a thing to resemble the rainbow; and, therefore, I beg those who may happen not to understand French, to be pleased to receive, from my pen, the following statements of the mere prosaic meaning of these words of this absolutely inimitable writer, who, in marks of simplicity the most pleasing that ever followed the movements of a pen, has, on numerous subjects, left, to ages unborn, philosophy the most profound and sentiments the most just and exalted.

A man of fourscore was planting trees. "To *build* might pass; but, to *plant* at such an age!" exclamed three young men of the neighbourhood. "Surely," said they, "you are doating; for, in God's name, what *reward* can you receive for this, unless you were to live as long as one of the Patriarchs? What *good* can there be in loading your life with cares about a time which you are destined never to see? Pray devote the rest of your life to thoughts on your past errors; give up distant and grand expectations: these become only us young men."—"They become not even you," answered the old man. "All we do comes late, and is quickly gone. The pale hand of fate sports equally with your days and with mine. The shortness of our lives puts us all on a level. Who can say which of us shall last behold the light of heaven? Can any moment of your lives secure you even a second moment? My great grand-children will owe shady groves to me. And, do you blame me for providing delight for others? Why, the thought of this is, of itself, a *reward* which I *already* enjoy? I may enjoy it to-morrow, and for some days after that; nay, I may more than once even see the sun rise on your graves." The old man was right; one of the three, ambitious to see the new world, was drowned in the port; another, pursuing fame in the service of Mars, was suddenly stopped by an unexpected shot; the third fell from a tree, on which he himself was putting a graff; and the old man, lamenting their sad end, engraved on their tomb the story here related.—*W. Cobbett.*

The Rose Acacia.—Mr. Gordon could not have introduced to our notice (see p. 531, vol. ii.) a more beautiful plant in the form of a shrub than the Rose Acacia. Mongredien speaks of it as a "small tree," but I have never seen it anything like what could be called a tree. In the grafted form (in which I have only seen it), it never seems to "take" well on the stock, and I have seen many plants of it blown off at the graft. A short time ago I had to deplore the loss of a fine bush of it by the wind blowing it off the stock in that way. I have always taken it for granted that this shrub would not thrive on its own roots, and if any one has it growing on its own roots it would be interesting to know how it thrives in that way. This Acacia has a pretty effect on a wall, but it is in the bush form in which its grandeur is seen to most advantage, and I know of nothing that so well repays high culture as this plant.—CHAS. M'DONALD, *Phœnix Park, Dublin.*

Cinchona Cultivation in India.—There are now 2,636,580 Cinchona plants in the Government plantationson the Neilgherry Hills, without counting those of private planters. The largest trees are 30 feet high, and 3 feet in girth round the trunk. The area covered by the plantations amounts to upwards of 950 acres. During last year 7,295 lbs. of excellent bark were sold in the London market, realising prices from 2s. 3d. to 2s. 10d. the pound; and 35,072 lbs. were supplied to the local manufactory, making a total value of £1,600. While the original outlay for introducing this important cultivation in India will soon be repaid to the state with interest, hundreds of natives of India are annually cured by the quinine febrifuge manufactured from bark grown on the Neilgherry Hills. The grand object of this beneficent measure has thus been attained, by the provision of an abundant supply of the febrifuge at so cheap a rate as to be within the means of the population at large.—*Ocean Highways.*

The New Drug, the Eucalyptus globulus.—Fever of a malarious character continues to prevail in the Mauritius, the extent of its prevalence as well as its severity varying much with the season—that is to say, increasing in the hot, and diminishing during the cold weather. We understand that the employment of quinine has been in a large measure discontinued in favour of the Eucalyptus globulus, which is considered by many who have watched its administration to have proved of real service, and a good substitute for the former very expensive alkaloid. The Mauritius offers, unhappily, a large field for testing the properties of this drug, and we shall await the results of further experience in that island with interest. At present there is only one tree in existence in the Royal Botanical Gardens, but the soil and climate of the Mauritius are very favourable to the growth of the Eucalyptus, and a large number of seedlings are thriving. The leaves are sold at sixpence an ounce, and an infusion of these is the popular method of administering the drug.—*Lancet.* [This tree grows rapidly over a vast area in temperate climes, as in southern Europe and California.]

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Need of Timber Trees.—People forget that while the supply of timber is limited the demand increases and accelerates the day of scarcity. At no very distant period, material for implements, ships, and building will be comparatively unavailable, and children may have very tangible reason for appreciating their father's wise forethought in planting trees.

Evergreen Robinias.—At the Lyons Horticultural Exhibition there were shown two Robinias, one by the firm of MM. Durousset, and the other by that of M. Morel. They are both said to be evergreen, and if this be true, will prove valuable acquisitions for purposes of ornamentation.

Conifers as Hedge Plants.—I have read with much interest your account of Abies Canadensis as an evergreen hedge plant, and should be very glad if any of your readers would give their opinion of Conifers generally used for this purpose. I am trying Thuja Lobbi, Cupressus macrocarpa, common Yew, and American Arbor-vitæ, but it is too soon to report on their respective merits. The two last are, of course, too well known; but some correspondent may, perhaps, be able to say which of all the Conifers would in five years make the best hedge as regards graceful habit, colour, and denseness.—J. H. W. T.

Lawns and Trees.—Where shrubs and trees are so freely introduced as to balance in extent the breadth of turf, the lawn at once loses all character, and simply degenerates into mere bits of grass, dividing clumps of shrubs or isolating fine trees. The amplitude of turf should so predominate as to command and absorb attention independent of all other embellishment; and the finest of shrubs, and choicest and rarest of trees, should never intrude themselves, but appear in a secondary light whenever we come to those reaches and expanses of turf which are the glory of English gardens. Let these expansions of turf be held inviolate from shrubs or trees. Listen not to those who would talk about a fine tree in the middle or an Araucaria or weeping Ash "just to break the breadth of turf."—W. J.

THE HOUSEHOLD.

CELERY.

IN the cold and dreary winter season in this country the choice of vegetables is somewhat limited, and would seem to call more than ever for the skill of the cook to make the best of it; yet such is the crudeness, so to speak, of British cookery, that it will not condescend to cook even the finest winter vegetable produced in these islands. Celery is generally served raw as an adjunct to cheese; and when they attempt to cook it, English cooks, for want of a bit of thread, send up a dish second only in unseemliness to the orthodox British greens. I do not wish for a moment to disparage the eating of raw Celery, which has considerable merits of its own; but I may be allowed to remark *en passant* that the practice of eating raw Celery is no better than that of eating raw green Artichokes or Tomatoes, and that I feel entitled to the sympathy of those who know how to eat for the sneers and the gibes I evoke when I point out the excellence of a salad of raw Tomatoes, or of a raw green Artichoke, young and tender, with that simplest of all sauces—oil, vinegar, pepper, and salt—good as it is simple. Raw Celery, cut up in convenient pieces, makes a very good salad, and can also be used with great advantage along with Olives, Beetroot, hard-boiled eggs, anchovies, preserved tunny fish, and sundry other things of the kind, to compose compound salads. Some of these have been, with questionable taste, dubbed with very grand names, as, for example, that of a celebrated adventurer of the last century, given by some professors to a salad of hard-boiled eggs and Celery, dressed with a mayonnaise and just a *soupçon* of Shallot; or the name of an equally celebrated actress, given to the same salad when Truffles and German sausage are added to it. In using Celery for these salads, or simply *à l'Anglaise* with the cheese, a considerable quantity of waste occurs; and it is the utilisation of this waste (the outside stalks, not the green leaves) of which I shall first treat.

The flavour of Celery, if judiciously employed, is a great improvement to many kinds of sauces and clear soups, down to the original stock pot itself, the *fons et origo* of all cooking operations. Now, the outer stalk of a head of Celery, if it is only duly washed, will impart the flavour just as well as the inner ones, or the heart of the said head; and if a sufficient supply of these outer leaves be at hand, Celery soup, clear or thick, white or brown, can be made with them, while the hearts may be served with cheese *à l'Anglaise*, or made into a salad, or constitute an *entremét de légumes* in the manner that I shall describe further on. The common form of making clear Celery soup consists simply in boiling in some *consommé* a good allowance of Celery trimmings a sufficient length of time to give the *consommé* a strong flavour of Celery. It is then duly clarified with white of egg or raw meat, and served with a small quantity of the inner leaf of Celery, cut in small pieces of uniform size, and boiled in water with some salt and a little sugar. To make thick Celery soup I would take a quantity of the outer stalks of Celery, cut in small pieces, and boil them in salted water till quite done; then I would cut up an Onion and a Carrot in small dice, and fry them to a brown colour in butter, and, adding to them the Celery, I would stir the whole on the fire for a few minutes, moistening the mixture with stock; and, having duly seasoned it with pepper and salt, I would pass the whole through a hair sieve; then I would dilute the result with stock, and lastly, stir in off the fire a couple of yolks of egg, beaten up with a small quantity of cold stock and strained, serving the soup with small dice of bread fried in butter. To make thick white soup, the Celery should be boiled till tender in salted water, with a blade of mace, an Onion, and whole pepper; when quite done (the water being drained off), it should be passed through a hair sieve, and the pulp thus obtained diluted with white stock free from fat, the soup being finished by stirring into it, off the fire, the yolks of two eggs, strained and beaten up with a gill of cream. The following are two other formulas for making thick white Celery soup:—1. Blanch the Celery in water, then set it to boil, cut up in small pieces with some milk and a handful of Rice, previously boiled in water. When both Rice and Celery are boiled down to a mash, flavour with pepper, salt, and nutmeg; then pass the whole through a hair sieve, dilute to the proper consistency with white stock free from fat, and finish by either of these three methods. (*a*) Add a pat of fresh butter. (*b*) Stir in the yolks of two eggs, beaten up with a little milk or cream, and strained. (*c*) Stir in the yolks of two eggs, beaten up with a little cold stock, and strained. 2. Boil the Celery in stock. Melt a piece of butter in a saucepan, add to it half its weight of flour; mix the two well together; add the Celery and stock, with pepper, salt, and spices to taste; stir the whole well, and let it boil, then pass it through a hair sieve; add either stock or milk if necessary, and finish as explained above. Small dice of bread fried in butter are usually served with these soups.

Celery sauce is made exactly on the same principle as the above soups, but it should be more highly flavoured and of thicker consistency, which latter result is easily attained by using a greater quantity of flour, that form being the best when a sauce, and not a soup, is to be made. That a well-made Celery sauce is one of the best adjuncts to braised and boiled poultry, and most white meats, hardly needs to be mentioned. A Celery sauce made still thicker merges into what is termed a *purée* proper, or in English might be called mashed Celery; and this also is a very good adjunct to cutlets or fillets of white meat, or may be served alone with fried sippets of bread round it, and eke a garnish of hard-boiled or of poached eggs. To so prepare Celery, less moisture as well as less flour should be used; and as for the flavouring, that remains the same, to be regulated only by the taste and skill of the cook—qualities which no directions of mine could possibly give that individual if she have them not. The common form for making a *purée* of Celery to be served as a vegetable would be as follows:—Boil the Celery in water with a bundle of sweet herbs, an Onion, whole pepper, a blade of mace, and salt to taste. When thoroughly done, drain all the water off, and pass the Celery through a hair-sieve. Melt a large piece of butter in a saucepan, add a little flour, stir well; then add the Celery pulp, stir the whole till quite hot, and serve. A little grated nutmeg may be added; and I may mention that a pinch of powdered sugar is not amiss in any of the foregoing preparations, all of which can be carried out with the outer stalks of the Celery. There is no reason, of course, but that of economy, why the inner part of the Celery should not be used; but if due attention is given to the proper washing of the stalks, and to the proportions of the flavouring, and, in fact, to the whole manipulation, no perceptible improvement will be gained by using the inner part.

Coming now to the cooking of this, I should first observe that the main reason why stewed Celery *à l'Anglaise* is so uninviting is, that each particular head is not properly trimmed and tied up as it should be. All the heads of Celery should be cut to the same length, and the roots trimmed all alike; then each head should be tied with a piece of thread (to be removed at the time of serving). Let no one cry out that this is unnecessary advice. I hope there are cooks in this country who know their business; it is not for them I write. I write for those who do not, and they are unhappily the majority. The simplest form of cooking Celery, when duly prepared as above, is to boil it in salted water with an Onion, a blade of mace, and some whole pepper; when done it should be carefully strained, freed from the threads, arranged neatly on a dish (not on a piece of toast—to my mind an abominable practice), and served with a plain sauce blanche, *i. e.*, melted butter into which have been stirred the yolk of an egg and the juice of a Lemon. Instead of this sauce may be used sundry others, *e. g.*, Tomato, *Béchamel*, *Soubise*, *ravigotte*, *poivrade*, *piquante*, &c. The next mode is this. The Celery is first parboiled, then laid in a saucepan on a bed of slices of bacon, with sliced Carrots and Onions, a bundle of sweet herbs, white pepper and salt to taste, a few cloves, and a blade of mace; enough stock is added to just cover the Celery, which is set to stew very gently till done; it is then dished up with a well-made Spanish sauce, or with some of the liquor it has stewed in, duly reduced, freed from fat, and thickened with butter and flour in the manner so often before explained. Another form of dressing Celery is to cut it in inch lengths, boil it in plain water till half-done, then to set it in a saucepan with any sauce you may fancy—white or brown—to simmer till done. Like the *purées*, this dish should be finished by the addition of yolks of eggs and Lemon juice, if the same be a white one, or it may be finished by the addition of a little cream, with or without the yolk of egg. Celery makes very good savoury fritters; but for this purpose it should be either boiled or stewed in the first instance, and, being cut into convenient pieces and well dried, dipped in batter and fried. Sweet fritters can also be made with Celery, which, for this purpose, should be parboiled first, then cut up and placed for some hours in a *marinade* of brandy and sugar, after which dip the pieces in batter and fry.

I have hardly left myself space to enumerate many varieties of which the preparations I have described are susceptible, but I will conclude with a recipe for dressing Celery with bread, which may commend itself to the lovers of the piece of toast that I so much deprecate. The proceeding is simple enough. Having parboiled the Celery, cut each head in half lengthwise, and stew it as directed above. When done, have some thin pieces of bread, cut in the shape of cutlets, and fried in butter to a light brown colour on both sides; dispose each piece of Celery on its *croûton*, arrange these in a crown on the dish, and serve with a well-made *sauce Espagnole*. The Celery served whole with a similar sauce, within a crown of these *croûtons*, each bearing a piece of beef marrow duly parboiled, makes a dish, if not quite fit for a king, yet sufficiently good for

The G. C., in the Queen.

THE GARDENS OF ENGLAND.

MILNER FIELD.

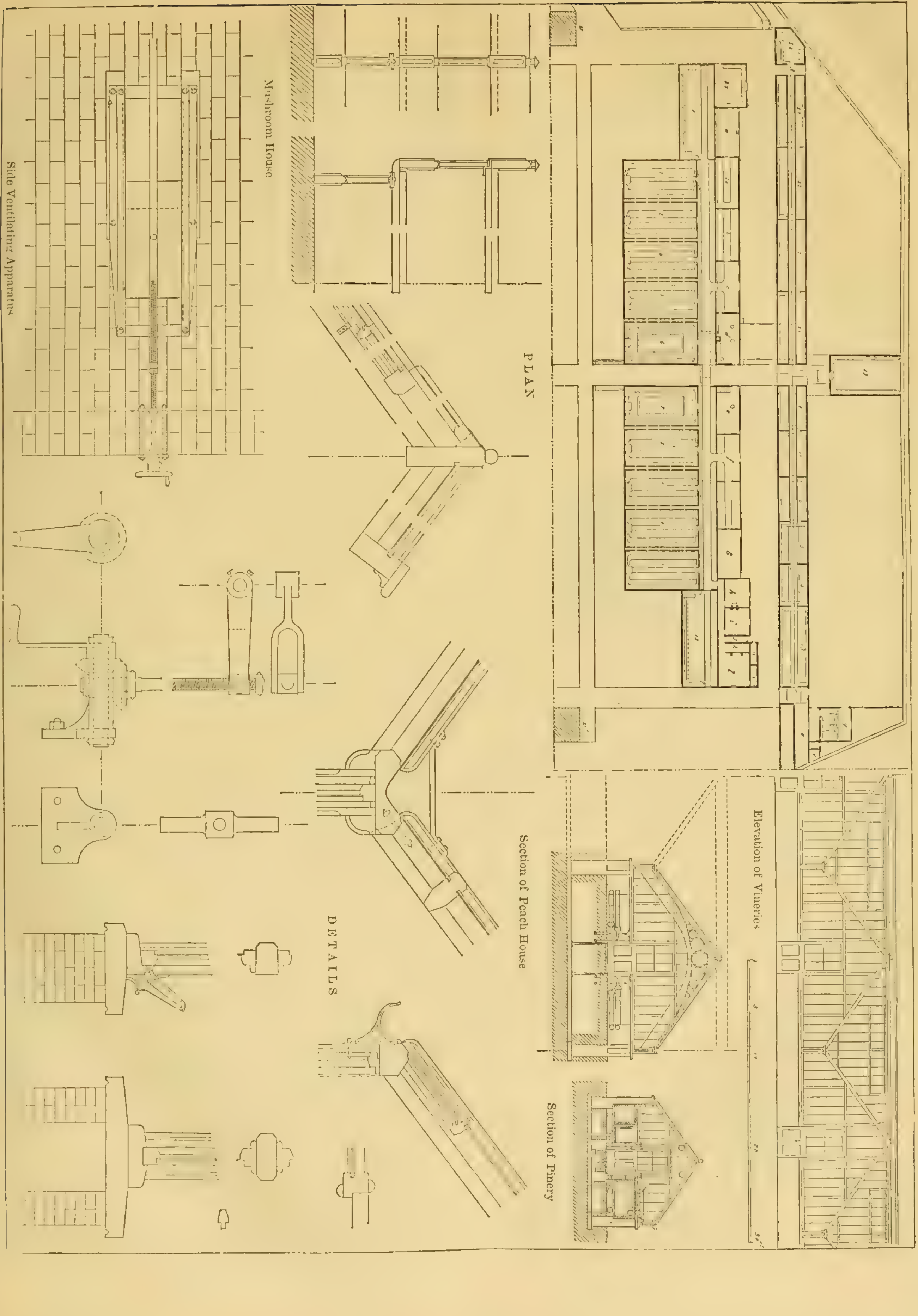
MILNER FIELD, Yorkshire, the seat of Mr. Titus Salt, is situated near the little town of Saltaire; and Saltaire, by the way, even from a horticultural point of view, deserves some notice at our hands, for, compared with the filthy manufacturing towns, familiar to us all, it is a fair garden. This wonderful creation of Sir Titus Salt's is well known to many, but we may nevertheless record that Sir T. Salt's determination to remove from the crowded town of Bradford, and to establish his vast works in an open, airy spot, has led him to form a town which could hardly fail to please even Mr. Ruskin himself, so free is it from the usual disagreeable marks of our manufacturing "civilisation" and "prosperity." Here it is shown clearly enough that manufacturing on a great scale may be carried on without necessarily disfiguring the face of the land, or being accompanied by conditions destructive to human life or health. The town, although a small one, is in possession of a pleasant little park, the gift of Sir Titus Salt, in which the shrubs and flowers seem to thrive as well as if 50 miles from a factory, as indeed they do everywhere in the town. The admirable club-house, presented to the workmen by Sir Titus Salt, and which cost him £25,000, and the other objects of interest in the place, we must pass by, and côme at once to the subject of our present notice, which is seen pleasantly situated on the hills about two miles from the town.

Milner Field is a new garden—indeed it is yet in process of being laid out by Mr. Marnock, but enough progress has been made in the forcing department to permit of us speaking of it, assisted by the accompanying plans and details.

The principal houses are ranged side by side, lying due north and south; they are 34 feet long and 18 feet wide, inside measure, and are ten in number, and with lean-to houses at either end. All these houses open into a covered corridor, so that every house can be entered without exposing it to cold winds. The walks in the corridors are laid with 3-inch thick Yorkshire flags, and the paths of the houses are laid with cast-iron plates, $\frac{3}{4}$ of an inch thick, and three feet wide, diamond pattern, supported on angle iron rails and cast-iron pillars every six feet; this arrangement leaves the border free for the roots of the vines, &c., to run under the paths. Out of each corridor opens a potting-shed, thus enabling plants to be carried into it without exposing them to the cold. The corridors are fitted up with tabling between the doors of the houses, for plants, and a high shelf runs the whole length, for Strawberries, &c.; the back walls are wired and ornamented with flowering creepers; one corridor with stove and the other with cool climbers. The houses Nos. 6 and 7 are fitted up with pits in the centre, and slate tables round, supported on angle iron rails and cast-iron pillars; the tables are covered with small cannel coal, which furnishes drainage for the pots, and has the advantage of not becoming green, as do spar and stone.

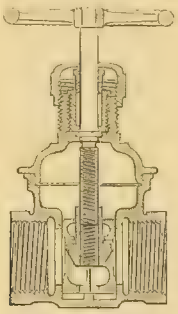
As to ventilation, the whole is worked from the two corridors by handles fixed on each side of the doors entering the houses, working by means of a pair of bevel wheels a perpendicular shaft with a double thread, which works into a nut attached to the levers for raising the top lights. These threads have all been cut in the lathe, are $\frac{1}{2}$ inch (double) pitch, and work very quickly and easily. The side ventilation is worked by means of a similar screw placed under the tabling, which opens and shuts sheet-iron doors into a ventilating flue in the brick wall between the houses, running to the outside; this arrangement is found to give ample ventilation. Nos. 2, 6, 7, and 11 have side light ventilation; the south lights in all the houses open if required; there is a rain-water cistern in every house, and a hot-water cistern (wood) in the boiler house, with a pipe through the wall and a tap in the corridor. This is of large size and supplies all the warm water for watering purposes. It is heated by a coil of hot-water copper pipes, so there is no fear of rust or other damage to the water.

As regards the heating, the whole of the houses are warmed by means of three of Weeks's patent duplex upright tubular boilers; one being only for use in an emergency. They are so connected that either one, two, or all three can be worked together, or any one will work the whole; and any one of them

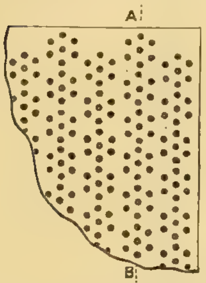


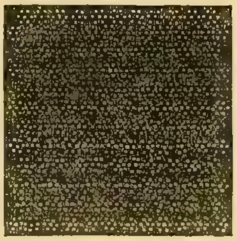
PLAN AND DETAILS OF THE NEW HOTHOUSES AT MILNER FIELD.

can be used separately, either for the front or back range, as may be desired. The boilers are about 7 feet high, and are doing their work admirably. The main pipes are 6-inch ones, and run the length of each corridor, branching out into each house under the doorways. Each house has valves on both flow and return pipes, as have also the main pipes. The valves used throughout are 2-inch, 4-inch, and 6-inch Peet's patent valves, and although costly in the first instance, they are certainly most complete.



The Pine and stove pits are made with malt-kiln tiles, about a foot square, supported on T iron bearers, an arrangement which necessitates a very small amount of bottom heat, and works most satisfactorily. As these tiles seemed to us admirably suited for the purpose, we have had engravings made of them, showing a section and a view of each face. The warm air flows through the small holes, so that it is finely divided in the mass of soil to be heated. The Pines grown are principally Smooth-leaved Cayenne, Queens, and Charlotte Rothschild; and the fruiting house is now full of fruit promising to be of very large size, many being eight and nine pips deep.





The Vines planted are as follows:—No. 8, all Black Hamburghs; 10, all Muscats; 1 and 12, late Vines; 9, various.

The following references apply to that part of the plan which lies behind the corridor, viz.:—

a. Cart shed.
b. Pot store.
c. Potting shed.
d. Boiler house.
e. Tool and ditto.
f. Potting shed.
g. Vegetable shed.
h. Bed-room.
i. Bed-room.
l. Living room.
k. Lavatory.
m. Coal house.
n. Larder.
r. Ashes.
s. Cold frames.
q. Stable.

Mr. Salt has been his own architect and builder as far as these houses are concerned. The Mushroom house is fitted up entirely with stone and iron, and the work has been executed throughout in the very best manner. Everything is most substantial and complete, and seems thoroughly adapted for the purpose intended. The adoption of a plan by which all the largest houses open on to a roomy corridor much facilitates the labours of the gardeners, and permits the houses to be visited in an agreeable manner in any weather. This, or some similar plan, deserves general adoption. We hope to allude to some more interesting features of the gardens here at another time.

A transatlantic contemporary describes a simple method of covering fresh flowers with alum crystallization. It is as follows:—Make baskets of pliable copper wire, and wrap them with gauze. Into these tie to the bottom Violets, Ferns, Geranium leaves, Chrysanthemums—in fact, any flowers except full-blown Roses, and sink them in a solution of alum of one pound to the gallon of water, after the solution has cooled, as their colours will then be preserved in their original beauty, and the crystallized alum will hold faster than when from a hot solution. When you have a light covering distinct crystals that cover completely the articles, remove carefully, and allow them to drain for twelve hours.

EXPERIMENTS WITH COLOURED GLASS.

Some interesting and instructive experiments have recently been made on this subject by M. Bert, and detailed in the *Belgique Horticole*, as follows;—I placed in large garden-frames filled with different coloured glasses twenty-five species of plants belonging to as many different families, including sun-plants (as Mullein, Milfoil, &c.), those growing in the shade (as the Violet, &c.), Grasses (Leeks, Cacti), green Cryptogams (Moss, Club-Moss, Maiden-hair), highly coloured red-foliage plants (Perilla), and Firs. The plants of each species were all of uniform size, and reared from the same seed. One of the garden frames was fitted up with ordinary glass, a second with white unpolished ditto, a third with well-blackened glass, a fourth with red, a fifth with yellow, a sixth with green, and a seventh with blue glass. Under the spectroscope, with a feeble jet of gas, the red glass was sensibly monochromatic; the yellow allowed of the passage of the entire spectrum, with a greater relative brilliancy in the yellow portion; with the green glass, the portions of the spectrum other than the green were extremely weak, particularly the blue and violet; the blue glass stopped all the rays except the blue and violet, the red being almost imperceptible. The frames were so placed as never to receive the sun's light direct, in which position they were—the yellow excepted—very nearly monochromatic. The operation of planting having been performed in advance, the frames were set on on June 20th. On June 24th I sowed in each of them several species of quick sprouting seeds, which appeared to spring up almost instantaneously. On July 15, the sun plants were dead in the black and green frames, very sickly in the other coloured frames, particularly in that with the red glass; all the other plants in the coloured frames were in bad condition. The mortality continued to increase. On August 2nd all the plants were dead in the darkened frame except the Cactus, the Lemna, the Firs, the Club-Moss, and Maiden-Hair, which were all very sickly. In the green frame all the plants were dead except the Geranium, the Leeks, the Celery, and the plants of the species still alone in the dark frame, but all of them doing very badly. The mortality was less in the red frame, and still less in the blue and yellow frames. The Perilla was dead in the black and green frames, and had lost all its red colour in the other coloured frames. An examination of the roots of the plants in pots showed that these organs were very slender in those in the black and green frames, less so in the red, fairly developed in those grown in blue and yellow frames, and very abundant in those in the frames fitted with white glass. On August 20th the situation had gained the mastery. In the black and green frames there remained alive the Acotyledons alone, and in a very sickly condition; in the red frames these plants were also sickly, less so in the blue and the yellow frames; as to the other plants, it seemed that the red had proved more detrimental than either the blue or the yellow. A close examination showed that the plants placed in the red light were much more elongated than those in the yellow, and in the blue more especially, but their stems were stronger. The grasses were more blanched in the yellow than in the blue; under the blue light the plants retained for some time their natural green tint, of a deeper shade than in those under the yellow frames, and a certain appearance of health withal. The seedling plants disappeared very quickly in the black and the green frames, and next in the red; in the blue frames they did better than in the yellow. I may add that in the frames with the uncoloured glasses all the plants continued to live and grow a trifle less vigorously under the unpolished than under the ordinary glass. Taking into account that the yellow glass was only two-thirds of the thickness of the blue, and that it allowed of the passage of rays of other colours than yellow, while the blue was monochromatic, we are led to the conclusion that—

1. Green is as fatal to vegetable life as the total absence of light. This is the conclusion I arrived at in the course of my experiments on sensitive films (see *Comptes Rendus*, vol. lxx., p. 388, 1870). The fact had been anticipated and explained before by M. Cailletet (*Comptes Rendus*, vol. lxv., p. 322, 1867). It is hardly correct to say that green light has no effect upon plants. I have found that the most strongly-heliotropic plants incline away from the green towards the red rays in their efforts to escape obscurity. 2. Red is a very injurious light, though less so than green. It produces a remarkable elongation of the plants. 3. Yellow is far less dangerous than the preceding colours, but more so than blue. If the plants lasted as long in the yellow as in the blue frames, it was due to the peculiarity above referred to. 4. Lastly, all colours, *taken alone*, are detrimental to plant-life; *their union in the proportions constituting ordinary or white light is requisite to healthy vegetation, and it therefore behoves horticulturists to renounce the idea of employing coloured glasses or other coloured materials for glass houses and garden frames.*

Now, if we examine light which has passed through a leaf with the spectroscope, we shall find that it is rich in red and green rays, showing that these rays have not been absorbed by the plant. It is not surprising, therefore, that plants are unable to live when the only light we give them is that they cannot turn to account in the ordinary course of nature. To employ a forcible simile, it is like attempting to nourish an animal on the residua of its own digestive processes. But the chlorophyl in the leaves of different species does not allow of the passage of precisely the same coloured rays. Hence it is, doubtless, that, under the shade of a large Oak young Oak trees can only be reared with great difficulty, whilst Mosses and Ferns flourish: and under the shadiest bushes, Violets, certain kinds of Neottia, and other like plants, grow freely. In a word, I believe the associations of green plants living in each other's shade are chiefly determined by the coloured rays utilized by their leaves. This point will form the subject of a series of experiments, which I hope to be able to undertake in my immediate neighbourhood.

GERMAN HOTBEDS.

On these are placed frames covered with prepared cotton cloth instead of glazed sashes. Take white cotton cloth, of a close texture, stretch it, and nail it on frames any size you wish; mix two ounces of lime-water, four ounces of linseed oil, one ounce white of eggs separately, two ounces of yolk of eggs; mix the lime and oil with a very gentle heat, beat the eggs separately, and mix with the former. Spread this mixture, with a paint-brush, over the cloth, allowing each coat to dry before applying another, until the cloth becomes water-proof. The following are some of the advantages which these lights possess over glazed sashes :—

1. The cost is hardly one-fourth of that of glass. 2. Repairs can be easily and cheaply made. 3. They are light and afford shade. 4. The heat arising from below is equable and temperate, and the vapour arising from the manure and soil is condensed by the cool air passing over the surface, and hangs in drops upon the inside, therefore the plants do not require so frequent watering. If the frames or stretchers are made large, they should be intersected with cross-bars about a foot square, to support the cloth. These cloth-covered lights are just the things for bringing forward flower seeds in season for transplanting; and for forcing early Melons, Tomatoes, &c., prepared cloth is especially adapted, as it can be tacked to boxes of any size required, and cut to fit them. Little, rough, square boxes of the proper size and height, covered with the prepared cloth, can be placed over the hills in which Tomato, Melon, or other seeds are sown, and the plants allowed to stand, without transplanting, until all danger of frost is over, when the boxes may be taken off and packed away carefully for another season.—*Our Home Journal.*

[Some ten or twenty years ago transparent calico frames were much used in this country. They were made by stretching the calico on frames of any size, and giving them several coats of linseed oil, applied boiling hot. They were remarkably useful for a variety of purposes, such as sheltering bedding plants in the spring, wintering Lettuces, Endive, and Walcheren Broccoli; protecting shrubs for forcing, &c. They were also used for growing early Radishes and Potatoes, and Cucumbers and Melons, when the summer got further advanced. As glass became cheaper, however, they gradually fell into disuse. The cloth seldom lasted more than two or three seasons. A general opinion seemed to prevail that the oil helped to rot it, and a thin coating of glue or inferior isinglass was occasionally applied to form a sort of glazed surface over the oilcloth. Lime added would merely give greater whiteness, the eggs, of course, would form a glaze; but surely they would be better without the yolks, and it would be difficult to make the lime water and the oil amalgamate. Still translucent or semi-transparent cloth is useful for many purposes, and possibly that prepared on the German method may be as good or better than any other; but the advantages stated can hardly have been proved by experience. 1. The cost, instead of being set down as only one-fourth, should have been written one-fourth first cost; and even that is hardly true now, for it needs good calico, from fourpence to sixpence a yard, for making translucent cloth with any stay in it. Besides glass does not wear out, and calico does. 2. It is said that repairs are easily and cheaply made, which is, however, not the fact. Every patch lets the wet in, and the only efficient repair is a fresh cover. 3. To this I have nothing to say; but in regard to the fourth list of advantages, the last sentence is correct, viz., that these frames are capital for raising seeds. In fact, there are many purposes for which they are useful. During hot weather, however, the plants require as much care in regard to ventilation and watering as under glass; and the great danger of the so-called transparent cloths is the drawing of the plants under them. No textile fabric can be made as translucent as glass, and every degree of opacity left is a loss of strength and sturdiness to all such plants as Melons and Tomatoes.—D. T. Fish.]

THE KITCHEN GARDEN.

THE EGG PLANT.

I learn from a contemporary that fruit of this plant has been offered for sale in English markets, but from the description given of it, the variety must either have been a poor one or its cultivation could not have been well understood. I see no reason why this fruit should not make a useful item in mixed pickles, although I have not seen it used in that way; the size and shape mentioned, viz., 6 inches long by 1½ inch in diameter, would be a convenient size to cut up for that purpose, and would be of no use for cooking. This fruit, like its near relative, the Tomato, may be improved by selecting the best for seed, a fact of which I have taken advantage by saving the best each year, until I have obtained a very fine "strain."

I consider the fruit of this plant to be one of the most delicate additions to our very extensive list of summer vegetables; when nicely cooked it tastes more like Apple fritters than anything else with which I can compare it. Owing to the plant itself being much more tender than the Tomato, it is useless to plant it in the open ground in England; but it would succeed on hot-beds under frames, or, better still, planted in pits heated with hot water, so as to furnish a bottom heat of about 80°. It is a compact grower, and if cramped in pots or planted in close corners it would be smothered with red spider, and of course prove a failure. In America we sow the seed about the 1st of April, in a hothouse, prick off the young plants as soon as they are up, and pot them into small pots before the roots become much entangled, shifting once or twice, the last time into 6 or 7 inch pots. We keep them in a night temperature of 65° until the middle of May, and then harden them off by degrees until about the 7th of June, when they are planted outside. The ground being by that time well heated by the sun, they make rapid growth, and would astonish those who had only seen the starved specimens grown in pots as curiosities in English greenhouses. A dozen plants yield abundance of fruit for the supply of a large family. The only attention required after planting is to keep down weeds, and if the weather is very dry to give one or two good soakings of water. The hotter the weather the faster the plants grow. Here the soil is frequently over 100°, yet we think it necessary to plant our Egg plants in a sheltered spot exposed to full sunshine. The plants when young are very tender, so that if fumigation is necessary, they should be removed from the house, and if checked in any way red spider will attack them and soon spoil them. J. Taplin.

South Amboy, New Jersey.

Improved Dandelion.—In the beginning of May, 1870, we sowed some seed of this Dandelion in a well prepared bed, in which the roots could easily develope themselves without meeting with any obstacle. The young plants soon appeared above ground, and in autumn we were able to cut from them great quantities of long and large leaves, which made an excellent salad. Others were cooked the same as Chicory (Endive), and were found to be very good. During the siege, ordinary Dandelions were sold retail in Paris at from three to four francs per pound. The improved variety is, however, so unlike the common kind, that each head of it might easily be mistaken for a large Batavian Endive, were it not for the colour, which is not the same. In winter we blanch wild Chicory in cellars, and in the bed in which it grows is also put the improved Dandelion, which produces leaves in equal abundance, and thus during the entire winter we are provided with blanched leaves of both plants, which are both wholesome and palatable.—M. Bossin. [This improved Dandelion was, we believe, sent out by MM. Vilmorin, of Paris.]

Asparagus Flowers.—Mr. Thomas Meehan, of Philadelphia, remarks, respecting the common Asparagus, that in consequence of observing last year so many plants that had evidently flowered producing no seeds, he had this year examined them in a flowering condition and found them perfectly diœcious. Imperfect stamens existed in the female flowers, but they were never polleniferous. An occasional gynœcium in the male flower would make a weak attempt to produce a pistil, but no polleniferous flower ever produces a fruit. There was a great difference in the form of the male and female flowers. The former were double the length of the latter, and nearly cylindrical, while the female flower was rather campanulate. Mr. Meehan added that this had a more than usual practical importance. Many attempts had been made to improve the Asparagus, as garden vegetables and the farm Cereals had been improved; but it had often been questioned whether these improved forms would reproduce themselves from seed as other garden varieties did. The tendency of thought the few past years had been in the direction of the belief that permanent varieties could be raised, and several improved kinds had been sent out by seedsmen, and were popular to a considerable extent. He said he had himself inclined to this opinion; but this discovery of complete diœcism in Asparagus, whereby two distinct individual forms were required to produce seed, rendered a true reproduction of one original parent impossible, as the progeny must necessarily partake of both forms.

THE GARDEN IN THE HOUSE.

DIEFFENBACHIA BARAQUINIANA.

Dieffenbachia Baraquiniana.

This is the best species of an easily grown, handsome genus of stove plants. It is of moderate stature, and associates well with larger fine-leaved plants, or it may be intermixed with flowering plants in the stove; it is, however, a plant that does not stand well if kept long out of a warm, somewhat humid atmosphere. Consequently if it is taken out of the house or pit in which it is grown, it ought to be returned to its usual abode at the expiration of a few days. It is a free grower, and is not over nice as to the material in which it is grown. Either peat or loam, or a mixture of both, will suit it, to which add a liberal admixture of clean sand, with a little thoroughly rotten dung. Use plenty of drainage. The plant will stand a liberal shift, say from a 6-inch pot to a 10 or 12-inch one. It will grow well in the temperature of an ordinary stove, and it must never, even when comparatively at rest in winter, be subjected to a low temperature. At that season it will require 55° or 60° at night. It is a gross feeder, and will grow all the better if supplied occasionally with manure water; it is, however, best as a rule not to apply liquid manure to quick growing, succulent, variegated plants, as most of them do not come so finely coloured if grown too vigorously. This Dieffenbachia is not much troubled with the attacks of insects, but should they appear they are easily kept in check by an occasional application of the syringe. It strikes freely from cuttings made of short pieces of the stem, inserted in sand, and kept a little close until they have struck root. It likes a little shade during the growing season, as its leaves are too soft to withstand the sun's rays when at all powerful. The beauty of its leaves makes it a desirable plant for room decoration, but it must not be kept too long indoors at a time, or it will fall into ill-health. T. Baines.

CUT FLOWERS.

Assuming it as a principle that in a properly appointed greenhouse or garden no more flowers for the internal decoration of a dwelling house should be cut than can be well spared, it is, I think, important to know how to employ them in the most efficient manner, and so as to produce the best result with the least waste of material. Take as many flowers as you can hold in the palm of your hand and give them to one of the bouquet makers in Covent Garden Market, and she will in a few minutes produce you an exquisite bouquet; give the same flowers to persons of little or no taste and they would be thrown away as useless. And how will the bouquet-maker proceed? Well, there must be a foundation, and having selected her flowers, Violets, single bits of Geraniums, Heaths, Epacrises, and other things, she will fix them neatly upon small twigs of sufficient length, and having done that, so as to have two or three pieces of each colour, she will proceed to make a foundation. Now foundations are formed in various ways and of widely different materials. In the winter season, box or a few sprays of any other small leaved tree are taken and tied together so as to form a foundation of sufficient size, and then taking a Rose or Camellia for a centre she will proceed to arrange the other flowers around it in a light and elegant manner, and this the foundation, by keeping the flowers well apart, enables her to do. She will then edge with Mignonette or Sweet Briar, or perhaps with Lily of the Valley, and drawing in a small frond here and there of the Maidenhair or some other Fern, you will have a bouquet in which colour does not predominate over the greenery which ought to surround it.

In like manner give the same floral artist a vase of any size to fill with flowers. She will most likely throw in as a foundation a handful of Sweet Briar, and then taking Fern fronds or any other remarkable foliage, she will arrange it thinly but artistically. If she has any trailing plants they will hang carelessly from the vase, and the same with Fuchsias or any other pendent flowers; and then the colour will be lightly, but sufficiently used. Nature everywhere provides a sufficiency of green for her colours to be placed upon, and if we would do so in our artificial arrangements they would be much more effective. Why is it that the spring months are so much more enjoyable than summer and autumn? Not because of the change from winter, but in consequence of the coolness of the various tints of green; whereas, in autumn, we get the glowing colour of our corn fields and the matured leafage of the trees. Artistically considered, autumn is the most beautiful part of the year; but for coolness and quiet beauty commend me to a fine May morning. These general hints will be sufficient to show the difference between an artistic appreciation of the beautiful, and the want of it in the arrangement of flowers. Some years back I had some very elegant coloured glass vases, and in them flowers were not used at all—a drooping spray or two of Passion-flower, or some other elegant climbing plant, depended from the sides; and two or three branches of the Vine, with the foliage and tendrils complete, was all that was used; and these in the early part of the season were something really worth looking at. Bundles of flowers without foliage are very unsatisfactory; but elegant foliage with a few flowers, gracefully arranged in a vase or bouquet, forms an ornament not to be surpassed by all the art of the lapidary and goldsmith put together. P. A.

A Parlour Window Garden.—In our parlour window I have at present a delightful garden, consisting of a nice green-leaved Myrtle in the centre, on each side of which is placed a plant of India-rubber tree, and between these and the sides of the window two pretty plants of Veronica imperialis, bearing respectively eight and twelve expanded spikes of beautiful purple flowers. In front, next the glass, I have two elegant little plants of Acacia lophantha, and on either side a potful of Roman Hyacinths; then two nicely variegated-leaved silver tricolor Pelargoniums, and two pots, each containing four Duc Van Thol Tulips, for both of which I paid a shilling, similarly placed. In each corner is a potful of Ferns; I say a potful, for Pteris serrulata and Adiantum cuneatum are associated together. The whole is set in a framework of Jasminum nudiflorum, trained up both sides of the interior of the window, two branches being introduced from a plant grown outside through apertures made purposely for them. They are now laden with bloom in even greater profusion than the shoots outside, and they came into flower a fortnight earlier. The surface soil of the Myrtle, India-rubber tree, Veronica, and Acacia pots is covered with Club Moss (Selaginella Kraussiana) intermingled with some seedling Ferns. I flatter myself that I possess the finest winter garden I have yet seen, and one which passers-by enjoy quite as much as ourselves.—Mary S. Wallace.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—The chief attractions belonging to outdoor gardens at present are winter Aconites, Jasmines, and Christmas Roses, together with a few miscellaneous flowers that have been tempted to expand, owing to the mildness of the season. Both evergreens and grass have also an unusually fresh look for this season of the year. Unless, however, cleanliness and tidiness are maintained, the most charming arrangement cannot be in itself satisfactory; therefore, in order to have a garden enjoyable, the roller, broom, and rake must be frequently at work. Use the hoe amongst growing plants, for a loose and open surface is congenial to their health. Prune deciduous shrubs, but the pruning of evergreens should be deferred until spring. All kinds of trees may still be transplanted, especially such as are deciduous. Proceed with any alterations that may have been previously determined upon. Any ground yet unturned should be dug over as soon as practicable; if for Dahlias, Foxgloves, Hollyhocks, or other strong-growing gross-feeding plants, add plenty of manure; but if for Pelargoniums or other plants that are required to produce abundance of flowers and to keep dwarf in growth, a dressing of leaf-mould will be more beneficial. Lay up the ground quite roughly, in order that the frost, wind, and sun may ameliorate and sweeten it; well pulverised soil is greatly superior to that newly dug. Break up the surface of gravel walks, but not so deeply as to disturb the rubble in the bottom; and, if necessary, apply a coating of fresh gravel. Roll grass verges so that they may not appear too high above the gravel when cut.

Conservatories.—Use only fire-heat enough to expel damp and frost, and no more; and when for the former have some air on the house at the same time. Maintain a temperature of 40° at night, with the usual daily rise. Water all evergreen plants moderately, and keep deciduous ones nearly dry. Plants in borders require watering very seldom at this season, there being but little demand upon the roots at this time of year; but pot plants, especially such as are near hot-water pipes, require unremitting attention as regards water, for although apparently moist on the top the soil in the bottom of the pots may be dry. Such a condition would be extremely detrimental, as the greatest amount of roots is amongst and over the drainage. Rather than keep the conservatory too warm, in order to forward the plants therein, supply any deficiency there may be in the way of flowers by means of Camellias, Azaleas, Jasminums, Weigelas, Kalmias, Prunuses, Acacias, Dielytras, Lily of the Valley, Dutch and Roman Hyacinths, Tulips, Narcissi, Crocuses, and other plants from the forcing pit. Decaying leaves are unusually plentiful on greenhouse plants this season, therefore they must be regularly removed. A rather dry and healthy atmosphere is the only remedy for such an evil, and to effect this supply artificial heat and plenty of air; indeed, no good opportunity should be missed to ventilate freely, fire-heat being used at the same time, but avoid draughts. Keep Heaths, Epacrises, Chorozemas, Boronias, Tremandras, &c., in the coolest and freest ventilated portion; and forced shrubs and other flowers, Orchids, &c., in the warmest parts. Chrysanthemums done flowering cut over, and keep a pot of each kind in a frame, if sufficient cuttings have not already been obtained. Plant the others in the open border, or, if not wanted out-of-doors, throw them away. Shift herbaceous Calceolarias and Cinerarias as they require it, and keep them cool and well watered; never permit a damped or decayed portion of a leaf to remain. Fumigate to destroy aphis, and keep in mind the old maxim, "prevention is better than cure." Keep Mignonette near the glass, and stake and tie it as may be necessary. Have a good succession of it in pits.

Stoves.—Maintain a temperature of 55° at night, and permit it to rise to 65° or 70° during the day with sun-heat. Plants of Poinsettia pulcherrima, whose beauty is past, should be removed to a dry corner and kept dry, but still in the stove. Plants of Hexacentris done flowering, cut well back and induce them to go to rest. Give some weak manure water to Eranthemum pulchellum. Lay plants of Lagerstrœmia indica on their sides in a cool house. Plants of Stephanotis, Allamandas, Passifloras, Clerodendrons, Cissuses, Echites, and other climbers, if required to bloom early, should be pruned, and syringed daily to encourage growth. The general stock of these, however, should yet remain at rest. Start a few roots of Achimenes, Gloxinias, Caladiums, and herbaceous Gesneras for early flowering; keep the majority, however, for later work and see that no damp comes in contact with them. Guard Nymphæa roots from the attacks of rats and mice; cats are the best and safest preventive against damage done by these vermin; and in order to encourage their presence a mouse or two should be given them in the place which they are desired to frequent; if that is done they will not fail to come again to look for more. Weasels are good friends to gardeners, and ferrets are useful for rat catching; with traps and poison and the other agents of destruction most of us are familiar.

Indoor Fruit and Forcing Department.—For fruiting Pines maintain a bottom heat of 80°, and a top temperature of 70° at night, and five or ten degrees less for succession plants. Pot suckers whenever obtainable, and keep the roots of all, except those swelling fruit, pretty dry. Begin forcing Figs with a night temperature of 50°, and thoroughly moisten the soil, for, if too dry, the young fruit is sure to drop. Peaches and Nectarines set their fruit much better if fire-heat and ventilation are given night and day during the time in which they are in flower, than they otherwise would do. Syringe the trees after the fruit has fairly set, and before the bloom has expanded, but not whilst they are in flower. Begin the forcing of Cherries with a night temperature of 45°, and give fresh air freely. Strip off the loose bark from late Vine rods, and apply a coating of some insect-destroying paint. Keep the unstarted houses as cool and airy as possible, and prune any Vines not already operated on. Syringe daily until the flowers begin to open, but not after that, for plenty of atmospheric moisture may be maintained by damping the floors and walls. Introduce into heat some Strawberry plants; 45° is sufficient at first, but if a bottom heat of fifteen degrees higher than that can be given, it would be an improvement. Continue to introduce successional roots of Rhubarb, Seakale, Asparagus, Mint, Dandelions, and Endive into the Mushroom house or hot-beds, where a temperature of 60° is maintained.

NURSERIES.

Continue to pot off singly good rooted autumn-struck Azalea cuttings, but if neither time nor space can be spared for shifting them at present, leave them for a time in their cutting pots set on a side shelf of a close pit or intermediate house. Decapitate all long naked-stemmed Dracænas; use the tops as cuttings, and place the pots containing the stumps on the floor along the passage in close proximity to the pipes, so that the heat therefrom may more hastily promote the production of fresh shoots. The shoots can be taken off as they attain the length of an inch or two and used as cuttings. This method economises room in the heated plunging material, which should be saved for more delicate subjects. Any Statices becoming too long-stalked should have an incision made on each branch just at the base of the foliaged crowns, after which some moss should be tied around it. The moss should always be kept damp, and if a little silver sand is mixed with it so much the better, as it helps to encourage root production. Keep old and young Statices moderately moist and in a minimum temperature of 45°. Decapitate tall plants of Echeverias and insert the crowns, no matter how large, in pots filled with good loam and a little silver sand, so that their base may rest therein without fear of being easily displaced. They soon emit roots and begin growing. Succulents of most kinds increase readily by means of leaves pulled off the plants, but in the case of those that produce side shoots abundantly, it is best to propagate by means of them, for in that case plants are sooner obtained. Pot off cuttings of Libonias and keep them for a short time in a warm pit, and when root action again begins, transfer them to an intermediate house. Divide the rhizomes of the variegated-leaved Acorus javanicus and keep the divided portions for a time in gentle heat. From male Aucubas in flower gather the pollen and keep it dry between bits of glass for future use. Start into growth in a warm pit tropical Crinums. Repot and start some Hæmanthuses; they may be placed upon the floor in a warm house or pit, or on a back shelf. Repot specimen Dipladenias, climbing Clerodendrons, Bougainvilleas, &c., and keep them dry for some time yet.

KITCHEN GARDENING FOR JANUARY.

Should frost set in, all kinds of vegetables will doubtless now be found securely protected, as previously recommended for December, and the various kinds of protecting materials convenient and come-atable will be found at hand and in readiness for any future emergency. Forethought, good system, and methodical application are the mainsprings of success in horticultural progress. We may naturally expect, after so much rain, severe frost, snow, hailstorms, and cutting winds for many weeks, when the application of protecting materials, more particularly abundance of dry dust, will be found invaluable. Examine all memorandums made of good and improved kinds of vegetables, and investigate all new seed lists at hand, selecting therefrom the most improved varieties and valuable kinds, which have been proved to be good. Look over the copies of your own seed lists for several years back, and select from them such old and good kinds of seeds as you have proved serviceable and true, never discarding a proved good thing till you are fully satisfied that you have found a decidedly better. Set about making out and sending in at an early season your seed lists, in order to give the seedsmen time to get the goods put up in proper order before the busy season arrives. Previous to this season's arrival of goods place any seeds left over from last year into drawers by themselves. Clean out thoroughly the drawers and cupboards, to be in readiness for the arrival of the new seed, and see that there is no chance for the encroachment of mice or beetles, and that all is dry and healthy, in order to prevent damp and mildew. Look over all the tools, which should always be found methodically arranged, and always put away clean in their places, and see to any repairs that may be required. The toothing of wooden rakes should be performed in wet weather by the garden boy or old man with tools consisting of a strong knife and iron punch made from a large nail with its point cut off or blunted, and a bundle of well-seasoned tough teeth made from sound ground Ash or other tough wood. Worn out tools replace with new ones possessing the last and most useful improvements. Select and wheel from the old hot-beds a good ridge of the cleanest decayed leaves for rotting into soil; also of the best rotten stable manure. Secure cow, horse, and sheep dung for the same purpose, and for converting into liquid manure. Collect and carry every kind of refuse to the manure or compost heap. Apply to it a good dredging of salt, and in turning it, freshly-slaked hot lime. If there be any weeds about, add them to the mixture. Manure and deeply trench up every bit of spare ground; cast it up into steep ridges 2 feet or 2 feet 6 inches apart, as roughly as possible, in order that the sun, wind, and frost can penetrate into the chinks and openings amongst the clods, to pulverise and sweeten them. This is the best means in practice of eradicating obnoxious insects, their eggs, and larvæ. Deep trenching and forking and tumbling over the ridges with strong forks or pickaxes, when well frozen, is a famous way for keeping vermin in check; besides it is as valuable hereafter as a good coat of manure to the land. Deep trenching should not be performed on new ground in the first instance, for in the rank subsoil that has never before been exposed to the atmosphere, now cast up on the surface, nothing during the first season of exposure could be expected to thrive. Oh, no! Break up deeply and loosen well the bottom of every trench, to allow the free circulation of air and water to prepare its gradual admixture in advancing the depth of the soil in future trenchings. Thus, by such a process, well carried into practice for some years, any desirable depth of soil may be obtained and fully maintained. Forced roots of Asparagus, Seakale, Rhubarb, and Chicory are now fully in bearing. Continue introducing in due time into moderate heat a succession of roots, and commence to cover Seakale outdoors where it grows with leaves, stable manure, or such fermenting materials as will produce a gentle heat, and are convenient and comeatable. Cauliflowers, Cabbages, and Lettuces of good kinds should be sown now in boxes or pans, in a little heat, such as the back of a frame, where Asparagus, new Potatoes, or Carrots are growing, or any place where a little warmth is at command, and prick them off an inch apart as fast as the plants can be handled, into other shallow boxes, pans, or pots. Place them under shelter until they are strong enough, and the weather favourable enough to prick them off, on some corner of a warm, sheltered border, or in a turf pit. Sow a small quantity of Celery on heat, and prick off as above. Never allow a check, but as soon as the plants are large enough plant them out on a gentle hotbed, covered with frames and lights, to grow on and be bleached for early use. Common wooden frames are always best for early Celery, because they can be so easily raised as fast as the Celery progresses, and owing to the Celery readily rooting down into the warm, decaying dung, and the applications at times of good tepid, clear manure-water, I have produced most beautiful blanched, crisp Celery in a very few weeks. Have under shelter dryish, sandy soil, or sea sand, and apply it on fine days for bleaching. The outsides of an early Celery bed should always be protected by mulching, otherwise the outside plants will make but little progress, while the middle plants will grow rankly. There is another evil or two to guard against in the production of fine, strongly-grown early forced Celery—first, if it gets checked, it will start, or become pipey; second, if water is not methodically applied, it will get the canker, rot, and mildew, and red spider into its foliage. To grow it strong, crisp, and well blanched, it requires a kindly bottom heat and 6 or 8 inches of good, rich, well-pulverised, sweet soil placed on the dung-bed. The plants should then be placed on it by taking the seed boxes to the frames, and lifting them with their tufts of roots and earth adhering thereto, and planting them in rows crossways, from front to back. Keep all side suckers pinched or rubbed out as they appear. Surface stir between the plants, previous to the commencing of earthing up. Admit fresh air freely, water and earth up as required, and raise the frames previously to the foliage reaching the glass, to prevent crippling the foliage. If room enough is not given for the air to circulate freely between the glass and the foliage, the canker, or that most destructive of all pests, the aphis, will appear. By these means a supply of wholesome Celery may be had throughout March, April, and May, and every day in the year besides. In the three months named good Celery seems always scarcest and dearest.

Place in a little heat in succession Tarragon, Lamb Mint, and last year's roots of Sweet Marjoram. Sow Sweet Basil and Sweet Marjoram in a gentle heat, and prick off as soon as up. Sow Carrots and Radishes on a gentle heat in succession. Sow Peas and Beans on warm, well-prepared borders. Plant out in frames, pits, or beds, covered with hoops and mats, Potatoes previously induced to shoot in a gentle heat. Prepare more for succession also, and after the borders work kindly, and there is no fear of sharp frosts, commence planting out of doors. Peas, Beans, Lettuces, and Cauliflower plants, under shelter, or out of doors, on warm borders, or sheltered nooks and corners, may be kept sound and sheltered by the application of dry dust. Prepare, dig, screen, and cart to convenient spots, gravel in a fit condition for casing old walks, and making new ones, which should be performed when groundwork and cropping cannot well be done; and previous to the busy cropping season see that all garden edgings are evenly made up, the water-courses, drains, and gratings are all clear, and in clean working condition. Select new Pea-sticks, point and sort the old ones. Turn into tidy ridges manure and compost.

JAMES BARNES.

OBITUARY.

"THE STRAWBERRY KING."

WE regret to have to announce the death of the Rev. J. Knox, of Pittsburgh, Pennsylvania. Mr. Knox initiated a new era in Strawberry culture, overcame the many difficulties that barred his way, and thereby deserved well of all lovers of fruit. Twenty years ago, about which time he engaged in this business, Strawberry culture was conducted in a rude and careless manner; no one thought of the possibility and the profits of raising berries of which nine or ten would fill a pint basket. Following his example, thousands of growers were benefited by his industry, perseverance, and firm belief in thorough culture. Perhaps no one thing made Mr. Knox's name so celebrated as the "Jucanda" Strawberry, also called "Knox's 700." This was not altogether new to horticulturists; but, under Mr. Knox's system of cultivation, it improved so much that, for some time, it was not recognised as the old variety. Through his agency it became widely distributed, and with it the renown of the Strawberry King. The annual Strawberry exhibitions at the Knox Farm will be remembered by thousands of horticulturists and professional men from every State. It is safe to assert that nowhere more exquisite fruit has ever been seen than at these social gatherings. Every one present was not only gladdened by the generosity and liberality of the host, but took home with him a vivid picture of success in fruit culture. Mr. Knox was a true gentleman in the fullest sense of the word, and was one of the leading spirits of the pomological meetings for the last two decades. By his achievements in fruit culture, he has left a permanent inheritance to American pomology, and the thousands who knew him personally, or by his works, will keep him in grateful remembrance.—*New York Tribune.*

WE also regret to have to announce the death of Mr. James Donald, for many years gardener at Hampton Court, a situation to which he was appointed by Lord Llanover, then Sir Benjamin Hall, and which he has filled with so much credit to himself. Mr. Donald was fond of natural history and had a good herbarium, as well as a tolerable collection of geological specimens. His knowledge of British plants was extensive, so much so that when foreman in the plant department at Chiswick, some thirty years ago, he offered 6d. to any of the young men in the garden who would bring him a native flowering plant which he could not name. He had long been ailing, but at last died somewhat suddenly from heart and lung disease.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

A PROFITABLE PEACH TREE.

On the 3rd inst., I visited the gardens at Manersa House, Roehampton Park, for the purpose of seeing a Peach tree there, of the productiveness of which I had heard good accounts. I saw it, and did not regret my journey, for I never beheld a more promising crop than it was bringing forward, even thus early in the season. We all know the uncertainty which attends the very early forcing of Peaches; but this tree has as fine a "set" of fruit on it as I ever remember having seen in March or April. Two trees are growing in the same house, which is 38 feet long and 16 feet wide; and both are equally productive, but the one referred to is the largest and consequently the most profitable. It covers a length of 20 feet, and was planted where it now stands eighteen years ago, having then been carefully removed from an outside wall, against which it grew and fruited for several years previously to shifting it indoors. It is a Royal George—a kind alike suitable for forcing and for general indoor and outdoor culture. Mr. Davis, the gardener, informed me that he has forced this tree every season for eleven years, during which period it only failed once to mature an excellent crop, which was in 1870, and that he attributed to over-cropping. For several years the fruit of this Royal George came first amongst Peaches into Covent Garden Market. On one occasion Mr. Davis sold the first dozen fruits to a fruiterer in his neighbourhood, who, not happening to find a customer for them, resold them to one of the principal salesmen in Covent Garden for the sum of £5. A few days afterwards another dozen was sent into the same market for sale, but this time only £3 could be obtained for them, the salesman adding, however, that he had sold the first dozen for £9.

Mr. Davis began forcing this season by shutting up the house on the 1st of November, an operation which might have been done if he had wished in October, so firm and ripe was the wood. The trees are planted inside the house in a border, the greater portion of which was removed and replaced with fresh turf about ten years ago, and whilst the fruit is swelling and the young wood growing it is deluged with sewage. The flow pipes run along between the trees and the glass and return along the centre of the house. Until the fruit has fairly set the night temperature is not allowed to be higher than 55° to 60°. The syringe is used freely from the time the house is shut up until the blossoms expand, when its use is entirely discontinued until the fruit has set. During the time the trees are in bloom air is admitted day and night, and fire-heat is given at the same time. Some gently syringe whilst the trees are in flower, but Mr. Davis does not do so, and success has attended his practice. Gently syringing expanded flowers may perhaps be practised with impunity in the case of trees that come naturally into bloom without forcing, but he has found it to be injurious to Peaches forced very early. When the fruit has set the ventilators are kept close at night, a damp moist atmosphere is maintained, and a good syringing is given every day by means of the engine with tepid water, and twice a day in fine weather. On my visit I found the house as follows, viz., fruit extremely well set, syringing again renewed, and disbudding of the young wood commenced. Disbudding and fruit thinning are energetically practised until the stoning period, when air is again left on night and day, and an equable temperature maintained. As soon as the fruits have stoned they may be forced as briskly as is desired and the final thinning performed. When ripe more air and a somewhat cooler temperature are again requisite for producing well flavoured fruit.

As soon as the fruit is gathered, instead of gradually lowering the temperature to correspond with that outside, forcing is continued. This matures and perfects the young wood sooner than it otherwise would be. When properly ripened, the house is gradually reduced in temperature until it is at last laid open to all weathers, and the result is hard, well matured, properly developed wood, suitable for early forcing. The tree in question has suffered near the base from a disease that is yearly eating away its existence. Mr. Davis thinks it must ultimately succumb to this ailment. In order, however, to sustain life to the uttermost, he annually pares away all the dead portion and fills up the hole with a mixture of cow-dung and loam, held in its place by means of a piece of canvas and rope-yarn.

The following is a tabular statement of the dates of ripening, the amount of produce, and the sum realised for it during the past eleven years.

Date.	Fruit ripe.	Prduce.	Sum realisd.
1862.	... June 15.	... 42½ doz.	£42 10 0
1863.	... May 28.	... 48½ ...	48 10 0
1864.	... May 1.	... 42½ ...	67 0 0
1865.	... April21.	... 27½ ...	65 0 0
1866.	... May 10.	... 38½ ...	50 0 0
1867.	... May 3.	... 39½ ...	49 17 0
1868.	... April21.	... 37½ ...	50 0 0
1869.	... April29.	... 54 doz.	£60 0 0
1870.	... May 3.	... 5 ...	6 3 0
1871.	... June 3.	... 74 ...	37 0 0
1872.	... May 1	... 64 ...	53 11 6
	Total	473½	£529 11 6

W. Falconer.

GARDEN HEDGES OF ROSES.

On visiting the gardens of the Right Hon. Lord Middleton, of Applecross, about the first week in August, I was much astonished to find a hedge of the Gloire de Dijon Rose over 200 feet long, and nearly 5 feet in height, and in the finest possible health, and one sheet of flowers—and such flowers! I was told by Mr. Whitelaw, the intelligent gardener there, that the idea of such a hedge originated with Lady Middleton, and that the idea was no sooner entertained than it was carried out; hence the result. Lady Middleton has also had a hedge of Sénateur Vaisse planted to the same extent as Gloire de Dijon, but more recently; consequently the plants have not the same fine appearance as the others. Those hedges are planted as screens to the kitchen garden, and nothing could be more appropriate; and, as Mr. Whitelaw remarked, there was no end of cutting Roses from them, which is another matter worthy of consideration where quantities of flowers are required. I may mention that before those hedges were planted a neat wire fence was put up, with five strands, and after the plants were put in they were fastened to the wires. As they grew, the shoots were intertwined in and out until they reached the top. By this means they are quite compact, and independent of any other fastening to the wires. The soil and situation here seem very suitable to the growth of the Rose, as the numerous dwarfs and standards were equally in fine health, and blooming in the greatest profusion. Applecross being situated on the west coast of Ross-shire, and nearly close to the sea beach, the influence of the Gulf Stream is sensibly felt; consequently there is but little frost in winter. Tea Roses, Fuchsias, &c., are seldom injured; in fact, Fuchsia Riccartoni is quite a shrub here.

J. Downie, *in The Gardener.*

The French papers describe the results of the present high temperature as something very unusual. Even in Paris the leaves are beginning to show themselves, and several spring flowers have appeared. Raspberries have ripened in some of the Southern departments, and a field of Asparagus is in full bearing at Larçay, in Indre-et-Loire; while at Orleans those who are fond of the cruel sport may, if they please, spin the early village cockchafer. At Perigord, near Toulouse, Almond trees have been in full blossom out of doors for these last eight days.

If the season of the year has been characterized by an unparalleled rainfall, it has also been remarkable for its extreme mildness. A handful of Violets may be gathered in a few minutes in the hedgerows in the neighbourhood of Haverfordwest, and in sheltered situations fruit trees are almost bursting their buds. We have seen this week, in a niche in the wall of Foley House, in a most exposed situation but partially screened from the wet, a quantity of zonal Geraniums with scarcely a ragged leaf or blighted limb. They seem to be enjoying their summer quarters now as well as they did in August. At Wierton House, Maidstone, the following flowers and shrubs have been in bloom during last month and this, viz., Tea, China, and Perpetual Roses, Veronicas, Fuchsias, Chrysanthemums, Picotees, Calceolarias, Violets, scarlet Geraniums, Antirrhinums, Gladiolus, Hollyhocks, Pyrethrums, Lavender, Schizostylis coccinea, Christmas Roses, Arbutus, Jasminum nudiflorum, Leycesteria, Escallonia macrantha, Gentianella, Primulas, Polyanthuses, Hepaticas, Snowdrops, Wallflowers, Phlox verna, Ceanothus azureus, Cydonia japonica, Myosotis dissitiflora, and various Anemones. Camellia blooms have also been cut from the open air, in the neighbourhood of Maidstone. Hazel catkins, in a very forward state, have likewise been received by us from Mrs. Harrison, The Avenue, Beckenham, Kent.

NOTES OF THE WEEK.

—— We have just seen evidence that the brilliant Gentian-blue Lithospermum prostratum, so valuable in our rock gardens and borders, is a very good subject for forcing. It is easily brought into bloom, and being distinct in habit and colour from anything used in early forcing, will prove a great boon for winter and early spring decoration.

—— The largest flowered forms of Cyclamen persicum which we have ever seen were shown by Mr. Clark, of Twickenham, at the last meeting of the Royal Horticultural Society, at South Kensington.

—— Messrs. Rivers showed a good collection of Oranges the other day at South Kensington from trees growing in cool houses. The flavour of the fruit is usually so much finer than is that of the ordinary imported fruit that the Orange is well worth growing in our cool houses for the sake of its fruit alone. It of course merits this also for the sake of its flowers.

—— Mr. W. Savile Kent, of the British Museum, favourably known for his biological and zoological researches, has been appointed curator of the Brighton Marine Aquarium, in succession to the late Mr. Lord.

—— Not only are fine dessert Apples, like the Newtown Pippin, now coming to us from America, but also kinds used in cookery. Mr. G. F. Wilson showed specimens at the last meeting of the Royal Horticultural Society of a dozen varieties or so of American cooking Apples in fine condition; they were purchased in Liverpool. Such supplies have greatly helped to mitigate the dearth of fruit that has existed this year at home.

—— Ever since variegated Kales have been used for decorative purposes at Wardie Lodge they have been planted for ornament more or less not only in Scotland, but also in England, and very effective they are where good kinds are employed. A correspondent signing himself "Argus" writes thus respecting his ornamental Kales :—"Never," he says, "have I seen them so lovely as they are this year. The snow whites, rich crimsons, and other hues contrast and light up the quarter in which they are planted with as much beauty, even at this dull season, as is to be met with in our summer gardens. But I must add that there are few of the stocks of variegated Kales that are worth growing, and I hope that the attention of some of our seed growers may be directed to this matter. I have grown Kales for years, and have had supplies from many sources, but have always been disappointed until this year, when their beauty is undisputable."

—— The loveliest sight which we have seen for months in the vegetable kingdom was that presented by a mass of the roseate Bougainvillea, sent from Ashridge Park to Kensington on Wednesday last. The branches of gloriously-coloured bracts were as fine as ever we remember to have seen them, and at this dull season the house in which they grow must be well worth a visit. The specimens were grown by Mr. Gray, the flower gardener at Ashridge.

—— Baroness Burdett Coutts, having observed that a meeting was to be held at Hackney, under the presidency of the Lord Mayor, for the purpose of securing the conservation of land, not only in the east of London, but throughout the metropolis, for recreation and enjoyment, has spontaneously forwarded to Mr. F. G. Heath, the Hon. Secretary to the Victoria Park Preservation Society, a cheque for £25 towards defraying the expenses of the movement. In order to guard public property everywhere about London from builder's and other encroachments it was resolved at the meeting in question that an association be formed under the name of the "Park Preservation Society," and that a committee be selected to carry out the necessary details. Epping Forest, it was stated, not many years ago contained some 7,000 acres; now there were but 3,500. It was, therefore, considered to be high time to band together in a legitimate manner for the assertion of the people's rights.

—— Some curious statistics respecting the importation of Potatoes are given in an official document just issued. In the month of December, 1870, the value of such importation was only £446; in the same month of the succeeding year the amount was £33,770; and in the month of December last it reached £343,367. In the year ended the 31st of December last the amount was £1,654,240 against £225,732 in the preceding year.

—— In memory of Professor E. Forbes, the learned Manx naturalist, will shortly be published, a "Flora of the Isle of Man," illustrated with engravings of the principal island scenery (waterfalls, &c.) and accompanied with an actual specimen of the Manx Fern (Adiantum Capillus Veneris) mounted as a vignette. Besides a list of the flowering plants known up to the present time, with localities and interesting notes of the species, a detailed description of all the indigenous Ferns and trees will be given, together with an introduction of botanical rambles through the island, the folk lore of wild flowers, and Life of Professor Forbes. An appendix will accompany the volume, describing a new method of nature printing, the art of preparing skeleton leaves, making screens with leaves, &c., especially adapted for ladies, thus providing intellectual amusement and occupation for the winter months, and as far as possible making a thoroughly readable and interesting volume. It is to be hoped that all lovers of British botany, especially friends of Professor Forbes, will cheerfully come forward and aid the author, Mr. James F. Robinson, Frodsham, Cheshire, in bringing out the first edition, the price of which to subscribers is not expected to exceed two shillings and sixpence.

—— Strawberries were sold in the streets of Rome on New Year's Day, and gardeners have picked Peas grown in the open air.

—— A very strong proof of the mildness of the season may be found in the fact that the Bristol and Exeter Railway now carries daily from Cornwall about 200 tons of Broccoli.

—— Mr. Peacock, we learn, has just received a new Opuntia from Texas. It is in the way of O. Rafinesquiana, but the spines are very dense, and 1 and 2 inches long, dark brown at top, and pale below. It is said to be perfectly hardy, to grow prostrate, and to be a very pretty species.

—— We understand that, on the occasion of the Emperor's funeral, on Wednesday last, Holly, Yew, and other trees growing in and about the little churchyard at Chislehurst, in which his remains are placed, got sadly mutilated, such was the eagerness of the crowd to carry off some memento of the sad event. Even Snowdrops in bloom on neighbouring graves were not spared.

—— Pine-apples at all presentable at this season used to be rare, but now, thanks to our leading growers, they are becoming quite common. The fruit exhibited at South Kensington on Wednesday last by Mr. Miles, gardener to Lord Carrington, were simply magnificent. At Midsummer such fruit would be a credit to any grower, but in *mid*-winter—and such a winter!—they were beyond all praise.

—— A beautifully bloomed plant of Crassula lactea has just been shown to us by Mr. Thomson, of Penge, who finds it to be a favourite with people who are fond of winter flowers, and yet have nothing better than a window or cool greenhouse in which to grow them. It is a fleshy leaved plant, which, though not more than 9 inches in height, bears a profusion of branching spikes of pretty white star-like flowers that last long in perfection. Belonging as it does to a family whose head quarters are at the Cape of Good Hope, it is, of course, not absolutely hardy; but it will nevertheless stand a good deal of hard treatment, and as a winter-flowering window plant has few equals at this season of the year.

—— Groningen, in the north of Holland, is a province almost entirely devoted to the culture of Potatoes. It appears that the district possesses thirteen mills which are said to be constantly at work converting nearly the whole of the Potatoes grown there into flour, of which 250,000 kilogrammes (about 246 tons) is produced per day. Thus far no one in this country has any right to object, but the journal proceeds to remark that the greater portion of this Potato flour is exported to England to be used in the manufacture of bread. Now we admit that Potato flour is a very good thing, but wheaten flour is a much better thing for food, inasmuch as the latter produces nearly five times the quantity of nitrogenous, or flesh-forming material, and nearly three and a half times the carbonaceous or heat-yielding matter as the former. It seems evident, therefore, that used in the manufacture of pure wheaten bread, Potato flour becomes a flagrant adulteration; and, if all the Dutch journal states be true, the sooner this monstrous fraud is looked into by our authorities the better.—*Food Journal.*

—— Our old friend *Punch* is quite delighted at the sight of his own shadow, cast during the recent sunshine, and we must confess that there is more common sense in his ecstacy than in the wretched twaddle lately bestowed upon gardening matters in "Happy Thoughts," by our facetious contemporary. The following is one of the least silly of the passages to which we allude :—"The new Currant bushes are tied on to the tops of the highest trees, looking very like those Dutch brooms which a landsman often notices with wonder at the mast-heads of fishing smacks. The Celery beds are completely dug up, looking like a troubled sea in dirty weather, with the exception of one small patch in the centre, where we observe a stone jar standing, labelled legibly 'Mixed Pickles.' Garden tools, all brand new, which he has bought on his own account, are, we see, planted out in a row, like young trees, and carefully propped up. An empty milk-pail is by the Strawberry beds."

THE INDOOR GARDEN.

SACCOLABIUMS.

THESE most charming of all Orchids come from the hottest tropical regions of the world, and when well grown form fine specimen plants of the most attractive description. To cultivate them successfully, however, they require a hot and humid atmosphere, together with many other tropical Orchids from the old world, which revel in heat that would soon be fatal to the pseudo-bulbous plants from the higher ranges of the new world. They are mostly natives of the continent of India or the Malayan Archipelago, where they luxuriate, bathed in tropical showers and warmed by the invigorating power of a tropical sun. In cultivation they grow best in fresh fibrous peat, charcoal, and crocks, the whole being surfaced with clean fresh living sphagnum. When making their growth they must be liberally supplied with moisture, and a frequent use of the syringe must be resorted to, which will keep them in a healthy condition and less liable to the attacks of that bane of Orchid growers—yellow thrips—than they otherwise would be. The syringe, when properly used, is a valuable aid to the successful culture of all Orchidaceous plants. A skilful Orchid grower may syringe his plants with advantage summer and winter, while many a less able cultivator might inflict a permanent injury by being entrusted with this useful implement. In dull weather, when there is but little light, and when growth is nearly, if not quite, at a standstill, the syringe should be used as a vaporiser, letting the water descend on the plants like fine dew, so as not to run into the crowns or trickle down the channelled leaves into their axils. This is easily done by placing the forefinger carefully over the nozzle or jet when syringing. By this simple precaution the water can be distributed far better than with the finest rose. If kept free from insects—thrips and brown scale—and grown in a warm temperature, which should not fall below 60° in winter, Saccolabiums may be grown well and flowered freely.

Saccolabium guttatum.

The following species, which are considered to be the best belonging to the genus, are in general cultivation :—

S. AMPULLACEUM.—This is an Indian species, which is rather dwarf in habit, bearing dark green leaves, which are sub-erect and distichous. The flower-spikes are produced very freely during the summer months, three or four erect spikes being borne on a plant 6 or 8 inches in height. The flowers are of a bright rosy purple colour, and last in beauty a fortnight or three weeks. This plant grows remarkably well in living sphagnum and crocks, in a shallow basket or pan, suspended from the roof, near the light. There are some fine plants of this species in Mr. Dawson's collection at Meadowbank.

S. BLUMEI.—This is a distinct and well-known species, from Java, having rather narrow leaves of a pale green colour, with darker lines below. It sports into one or two finely coloured varieties, and bears pearly flowers, spotted and blotched with rosy lilac or violet. It generally blooms in autumn, and lasts a fortnight or three weeks in perfection, if the flowers are kept from drip or superfluous moisture. S. Blumei majus, S. Blumei Dayi, and S. B. Russellianum are all considered by cultivators as superior varieties.

S. CURVIFOLIUM.—This is a very distinct species, found in Nepaul and Ceylon, and easily recognized when not in flower by its light green, gracefully arched foliage, which is sometimes spotted with purple or brown. Its blossoms are orange scarlet, varying to pure yellow in different varieties. It is a desirable little plant, and does well in a basket or pot.

S. GIGANTEUM.—This species, which comes from Burmah, is one of the finest of the whole group, having very stout broad foliage marked with parallel dark lines, as in S. violaceum (Vanda violacea). Its flowers are large and of great substance, and arranged very thickly on stout tapering spikes. Some varieties are remarkable for the dense violet colour of the lip. It is very fragrant and lasts from three weeks to a month in beauty. It blooms in the spring and grows well in a cork basket or pan suspended from the roof.

S. GUTTATUM.—This species, which has been found in Nepaul, Java, Sylhet, and Malabar, is a lovely and very profuse flowering kind when well grown. The habit is something like that of S. Blumei, but the leaves are darker and not so definitely marked with dark lines. The flowers are pure white spotted with rosy-purple or lilac, and are borne on gracefully pendant spikes, as shown in the accompanying illustration, which gives a fair idea of the superlative beauty of this plant when well flowered. The blossoms are of a wax-like consistence and most deliciously perfumed. It makes a fine exhibition plant when well established, and was exhibited some years ago with between twenty and thirty spikes on a plant. There are several varieties of this species, which differ from each other and the normal type either in the colour of the flowers or in the width of the foliage. They last from three weeks to a month in beauty.

S. VIOLACEUM.—This old Manilla species is well worth culture on account of its flowering during the winter months. It bears numerous short dense spikes of white and violet flowers, and lasts a month in perfection.

There is a white variety of Saccolabium called Holfordianum by growers, which is well worth having in the most select list. There are about half a dozen more species in cultivation, but all the above are select kinds well worth growing in all good general collections.

F. W. B.

DOUBLE-FLOWERED TABERNÆMONTANA CORONARIA.

THIS is a native of the West Indies, and, though an old inhabitant of our gardens, it is now rarely seen in anything like good condition. A quarter of a century ago it formed a leading exhibition plant. Its flowers, though smaller, are not unlike those of a Gardenia. They are pure white, are produced in bunches of from two to five, and are sweet and admirable for bouquets. The plant is a very free-growing one—when it gets suitable soil and plenty of heat—but still it is not an easy matter to produce a dwarf, compact, well furnished specimen. It is readily propagated by cuttings of the half-ripe or mature wood, though the first is preferable; and the best plan is not to trim the cuttings to a joint in the usual manner, but to cut them at 2 inches long, so that the growing buds may be brought as near to the surface of the soil as possible. Put them in either singly in thumb pots, and, after plunging in a brisk bottom heat, cover with a bell glass; or put them ten or twelve in a 4-inch pot, and then cover them. A mixture of peat and loam with some sand, surrounding the cuttings with sand, will be the best medium in which to strike them. When properly rooted, which will be in about six weeks, inure them gradually to the air, and then begin to grow them on. The best compost to grow them in will be found to be two pecks of rich fibrous loam from which the fine soil has been removed, half a peck flaky leaf-soil, peat the same quantity, with a quart each of crushed charcoal and sand all thoroughly incorporated together. If the newly struck plants are vigorous and well rooted, they may be removed at once to well-drained 4-inch pots, sinking them so as to bring the branches close to the soil. Pot firmly, and if afterwards the plants can have the benefit of a bottom heat of 80° to 90°, they will be all the better for it. Thiswill start them into vigorous growth, and the side shoots will make rapid progress. The atmospheric temperature necessary to the best results will be a mean of 70°, rising to 80° or even 90°, with sun heat on bright days, and with plenty of atmospheric moisture. When the pot is full of roots, reduce the supply of water for a week or so, and place the plants close to the glass, so as to ripen them a little, then cut the shoots back to within two joints of the base, and, instead of two, you will soon have four, six, or more shoots. In this way you get what may be called a foundation for your specimen, and then the plants may be allowed to grow on for the remainder of the season. After they have been stopped, and begin to grow again, the plants may be moved to an 8-inch pot, using the same compost, and continuing the treatment as to heat and moisture. If you want the young plants to bloom, that object must be effected by attending to the ripening process early in the autumn. The growth must be brought gradually to a standstill, and then, by free exposure to full sunshine, the wood must be thoroughly matured. This effected, the temperature of an intermediate house, 50° to 60°, will be sufficient through the winter, and the season of blooming may be governed by the time at which you introduce the plants to a brisk growing temperature. If, however, the object is to make a handsome specimen, blooming the second season must not be thought of. Instead of that, cut your plants boldly back in February, and as soon as the young shoots make their appearance take the plants out of the pots, remove such of the old, inert soil as you can without destroying the roots, and then pot them on into pots of suitable size. The same summer treatment as to bottom heat, and a brisk growing temperature may be continued, but at the same time the plants must have all the light possible, so as to induce a short, stubby growth, and hence rampant shoots may be stopped with the object of getting side spurs; but this stopping must not take place later than the end of July, or the growth will not be matured. If these directions are attended to, the end of the second season of growth should show a plant that will furnish handsomely a 12-inch pot; and once formed, the plants will continue to grow steadily for many years. With established plants the only care necessary is to stop rampant growth and encourage the formation of spurs; for, as the plants bloom from these small shoots, one cannot have too many of them. I have omitted to mention that weak manure-water may be given when the pots are full of roots and the plants in free growth, and also at the time when the blossom buds are swelling. The plants are subject to the attacks of insects, which must be subdued in the usual manner. A.

THE HÆMANTHUS.

THIS is a genus of African bulbous plants belonging to the order Amaryllidaceæ. They are easily managed, and many of them produce large and highly-coloured umbels of bloom; and yet there are now but few people who either know or grow them. Twenty years ago these plants were highly prized, especially in one situation in which I was employed, where we used them extensively, and found them extremely serviceable at two particular seasons—viz., in early spring and end of summer. Those flowering in spring were of course forced, and in this way they were easily managed; whilst the late summer flowers came naturally, and were most useful, for all gardeners and amateurs know that just at the end of summer there is usually a great paucity of bloom in the conservatory, and these then become doubly valuable. I have frequently heard the objection raised that they are ugly because they flower without leaves, and there is something in this objection; yet it should not deter lovers of plants from their cultivation; and, moreover, all the species are not leafless at the blooming time. When I used these plants extensively, my remedy for this want of leaves was a very simple one, but nevertheless so effective that it could be adopted by any and every one. When the bulbs were brought out from their resting-places and induced to send up their scapes, some seedling Ferns were pricked into the soil tolerably thick, and as these grew up they always produced sufficient leafage to back up the gay-coloured blooms, so that the absence of their own foliage was not missed. A proper selection of Ferns should be made for this purpose, by which I mean good, free-growing, robust-constitutioned kinds, such as Doodia caudata, Adiantum cuneatum and A. hispidulum, Asplenium bulbiferum, Blechnum occidentale, Lastrea decomposita, Nephrodium molle, Phegopteris trichodes, Polystichum coriaceum, Pteris serrulata, and its varieties, and similar plants, most of which can be provided by sowing spores, and keeping them in the seedling box for the occasion.

Hæmanthuses are nearly all natives of the Cape of Good Hope, and if allowed to flower at their natural season may be treated as greenhouse or conservatory plants. After growth is completed and the leaves have decayed, the pots should be laid on their sides in some dry and cool place. I am not, however, an advocate for too severe a system of resting. Those kinds which come from tropical Africa must receive the temperature of the stove, and must not be so thoroughly dried off as the Cape kinds. The soil should be good sandy loam, to which may be added a little peat and leaf-mould, and when the scapes begin to push an occasional application of weak liquid manure will be highly beneficial. The genus comprises a vast quantity of species, some of which are not conspicuous for their beauty, and which would only be tolerated in botanical collections, where they should be grown for the instruction of the many. The following kinds, briefly described, all deserve attention from those who love a variety of flowers rather than masses of two or three kinds only. I may add that a plant of H. coccineus, or many others, with, say, six or seven umbels of brilliant flowers, surrounded with small and elegant Fern fronds, is no mean object in a vase in the drawing-room; and in such a situation they survive a considerable time, and the plant itself is sure to take no harm.

H. puniceus.—Leaves oblong, waved at the margins, and pale green; the flowers are erect, produced in large umbels, and are pale red; the scape and involucre are green, both being streaked and spotted with blood-red. It blooms naturally in April and May, and with a little forcing may be had in flower before the snow has disappeared.

H. quadrivalvis.—This is a very beautiful species; leaves usually in pairs, lanceolate and acute, less than a foot in length, and dark green, furnished at the margins and on the whole upper surface with long hairs. The scape is erect, green, and dotted with crimson, and supporting a large four-leaved brilliant scarlet involucre. The flowers are also scarlet, whilst the stamens are bright yellow. It blooms in September and October, and no more beautiful plant could be desired at that season.

H. rotundifolius.—A fine plant, producing its leaves in pairs, one of which is, however, invariably larger than the others. They are some 5 inches long and 4 inches broad; dark green on the upper side, and have a rosy pink margin of hairs. The scape and involucre are both of a rich deep crimson colour; the tube of the corolla white, and the remaining portion red, with large golden yellow stamens. It flowers in July and August.

H. tigrinus.—This is a noble species, and one which I have found extremely useful for early forcing. The leaves are large, depressed, dark green, and slightly spotted with a marginal fringe of hairs. The scape supports a large-spreading, fiery-red involucre and umbel of red flowers, whilst the stamens are bright yellow. It blossoms naturally in April.

H. pubescens.—Although not so ornamental as some species, this is a great favourite of mine for the sake of agreeable contrast. Three or four leaves are produced together, somewhat tongue-shaped, dark green in colour, prettily fringed with white hairs. The scape is green, furnished with numerous soft hairs; involucre yellowish green, streaked with a dark shade of the same colour; flowers erect, white, with the numerous large anthers brownish yellow. It flowers in June and July. Known also by the name of H. albiflos.

H. natalensis.—This beautiful species is of somewhat recent introduction. The leaves are large, of a dark green colour, and have their base clothed with beautifully-coloured sheaths. The scape is erect, and bears a large, even involucre, which is of a rich crimson purple colour; the umbel of flowers is pale green, and the anthers of a bright orange colour. Its charming flowers are displayed in the dreary month of February.

H. coccineus.—This grand species is, as far as I know, the finest of all the South African kinds. The leaves are somewhat tongue-shaped, and dull green in colour. The scape is erect, green, spotted and dotted with black and dull crimson; the involucre is very large and spreading, and consists of many bracts, which are deep red, veined with crimson. The large umbel of flowers is dull red, and the large anthers are of a bright yellow colour. These superb flowers are produced in September and October.

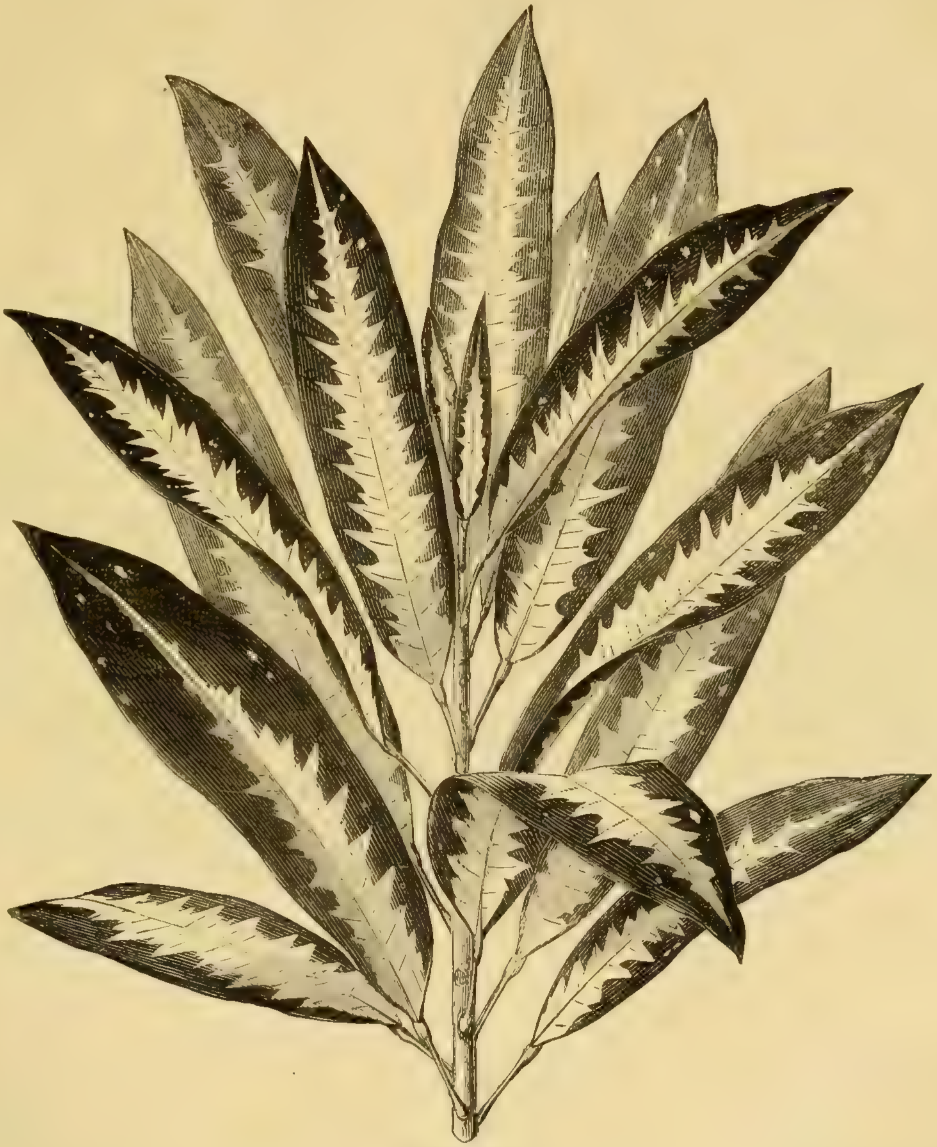
H. multiflorus.—This is an extremely showy plant, differing from the previously named kinds in having a small and inconspicuous involucre. The leaves are oblong lanceolate, clasping at the base, smooth, and pale green. The large, many-flowered umbel is spreading, flowers deep blood red, whilst the stamens are purple and yellow, and much exserted. It blooms in July, and is a native of Sierra Leone.

H. cinnabarinus.—This, like the last-named species, produces flowers and leaves together—and, indeed, they closely resemble each other. In the present species the leaves are large, sheathing at the base, and the bulb is produced into a long neck. The bracts of the involucre are small and inconspicuous; the umbel of flowers large and spreading, with the stamens much exserted, and wholly of rich cinnabar red colour; the anthers are yellow. It is a native of Western Africa, and blooms in August.

There are many more species than I have here enumerated. Many of them, I am told, are exceedingly beautiful; but, not having seen them, I have confined myself to those kinds which have passed through my hands and can be confidently recommended. The two last-named kinds are stove plants, or at least require a greater heat during the winter months than the others, which are all natives of the Cape of Good Hope or South Africa, and consequently thrive under ordinary greenhouse treatment; but even these are benefited by a little heat when growing late in the season. G. Field.

CROTON HOOKERI.

Among Crotons may be found some of the most beautiful of plants, remarkable alike for their stately habit and for the highly diversified and brilliant variegation of their leaves; some of these are long and narrow, as in the case of C. Johannis and longifolium; others are irregular in shape, as in C. irregulare, interruptum, and multicolor; others again are beautifully undulated or waved on the edges, like C. undulatum; horned, as in the case of C. cornutum, the midrib of which terminates in an upright horn-like process, half an inch or so from the extreme end of the leaf; and others are spiral-leaved, like C. spiralis, a beautiful new variety. Another section of this genus has compact, oval foliage, such as C. pictum, variegatum, and aucubæfolium. The colour and marking of the leaves are also as variable as their shape; in C. multicolor there is, as its name implies, a combination almost, indeed, a confusion of hues, consisting of green, yellow, red, and crimson; C. aucubæfolium is spotted with yellow, like the Aucuba; C. pictum has a crimson ground colour, richly spotted with yellow and black; C. undulatum is deep metallic green spotted



Croton Hookeri.

with yellow and vivid crimson, and C. Veitchii has a broad band of yellow along the centre.

C. Hookeri, the subject of the accompanying illustration, is one of the finest of the genus. It is a compact yet free grower, and a native of the South Sea Islands, whence it was introduced into this country by the late Mr. J. Gould Veitch. Its leaves are broadly ovate-lanceolate and abruptly tapering or rounded at the base. The petioles are an inch or an inch and a quarter long, and the leaf-blade from 7 to 9 inches long by 2½ to 3 inches broad. The midrib, young stems, and leaf-stalks are of a bright golden colour, a broad band of which traverses the centre of the leaves, irregularly projecting on both sides of the midrib. The upper surface ground colour of the foliage is a beautiful dark shining green, and the underside considerably paler. Like others of the genus, it requires a stove temperature. A compost of three parts good substantial loam and one of peat, with a little sharp silver sand, suits it admirably. During its period of growth it requires a strong heat and abundance of root and atmospheric moisture. In winter a temperature between 55° and 65°, with the usual daily rise with sun-heat, will suit it perfectly. Water in moderate quantities must also be applied, for, like all other coriaceous evergreen-leaved plants, it will not suffer drought with impunity. A position near the glass is necessary, in order to enchance its brilliant leaf markings. The young wood and foliage are usually pale in colour, but they assume the true tints characteristic of the species after the wood has thoroughly ripened, and before the growth of the young wood of the succeeding spring appears.

When well nursed, plants of this species grow vigorously, and as soon as the desired dimensions are attained, they should be kept pot bound, so as to dwarf their future growth. They require abundance of water when root-bound, and the advantage of having so loamy a soil in preference to a peaty one consists in its being productive of firmer wood, more likely to stand uninjured the adverse circumstances to which plants are subjected when used for window or parlour gardening. Some cultivators grow them for two and sometimes three years without shifting them, but this treatment soon induces an impaired constitution. It is a good plan to have an old plant from which a few cuttings can be taken annually in spring or in August; insert them in small pots of peaty sand, surfaced with pure sand and cover them over with a bell-glass. The pots should be plunged in bottom heat and closely shaded for a time. When well rooted shift them into better soil and sixty-sized pots, and still give a brisk root temperature, and keep them growing as vigorously and healthily as circumstances will permit. In this way a succession of fine young plants, suitable for any purpose, is always at command, which, when they have become too large, can be thrown away. The finer kinds may also be grafted on the strong growing sorts. Side and cleft grafting are most suitable, and they can be performed either in spring or autumn, the pots being plunged and shaded like those containing cuttings.

Wm. Falconer.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Rhododendron Princess Royal.—I find this to be one of the most useful of all pot plants, especially at this time of the year. I have a plant of it that has been in bloom now for more than eight weeks. It is in a large sized pot, and it has borne eight trusses of bloom. All that it requires is the protection of a greenhouse in winter.—T. R. H., *Kenwood*.

Dendrobium nobile.—Of this I have a charming plant now in full bloom, and associated as it is with a few Ferns, Lily of the Valley, and Tea-scented Roses, it makes the early vinery in which it is growing nearly as gay as a conservatory. We may have had Dendrobes more handsome; but in point of usefulness none surpasses D. nobile, and it is so easily managed that everybody who has a warm greenhouse may grow it.—R. Gilbert, *Burghley*.

Panicum variegatum.—I have a nice plant of what is usually called Panicum variegatum in our early vinery, finely in flower. It is associated with small plants of Coleus and Ferns, which, under a canopy of green Vine leaves, have a pleasing appearance at this season of the year, and make the house a favourite resort for all lovers of fine-foliaged plants.—J. Gilbert.

Sparmannia africana.—This is a useful old white-flowered plant, cuttings of which may be inserted at any season, and soon make nice little blooming plants. Even if this plant were less interesting than it is in a decorative or floral point of view, it would still be worth culture as a souvenir of Captain Cook's second voyage round the world. It is also remarkable on account of its being furnished with irritable stamens, which expand slowly if touched, more especially during bright sunshine. This action differs from that of the stamens of Berberis, which contract closely round the style, while these expand or recede from it.—F. W. B.

TREES.

Father, thy hand
Hath rear'd these venerable columns, thou
Didst weave this verdant roof. Thou didst look down
Upon the naked earth, and forthwith rose
All these fair ranks of trees. They, in thy sun
Budded, and shook their green leaves in thy breeze,
And shot towards Heaven. The century-living crow,
Whose birth was in their tops, grew old and died
Among their branches, till, at last, they stood,
As now they stand, massy, and tall, and dark,
Fit shrine for humble worshipper to hold
Communion with his Maker. These dim vaults,
These winding aisles, of human pomp or pride
Report not. No fantastic carvings show
The boast of our vain race to change the form
Of thy fair works. But thou art here—thou fill'st
The solitude. Thou art in the soft winds
That run along the summit of these trees
In music; thou art in the cooler breath,
That from the inmost darkness of the place,
Comes, scarcely felt—the barky trunks, the ground,
The fresh moist ground, are all instinct with thee.
Here is continual worship; nature, here,
In the tranquillity that thou dost love,
Enjoys thy presence. Noiselessly, around,
From perch to perch, the solitary bird
Passes; and you clear spring, that, 'midst its herbs,
Wells softly forth, and visits the strong roots
Of half the mighty forest, tells no tale
Of all the good it does. Thou hast not left
Thyself without a witness, in these shades,
Of thy perfections. Grandeur, strength, and grace
Are here to speak of thee. This mighty Oak—
By whose immoveable stem I stand and seem
Almost annihilated—not a prince,
In all that proud old world beyond the deep,
E'er wore his crown as loftily as he
Wears the green coronal of leaves with which
Thy hand has graced him. Nestled at his root
Is beauty, such as blooms not in the glare
Of the broad sun. That delicate forest flower,
With scented breath, and look so like a smile,
Seems, as it issues from the shapeless mould,
An emanation of the indwelling Life,
A visible token of the upholding Love,
That are the soul of this wide universe.

W. C. Bryant.

Bamboo Poisoning.—A singular peculiarity belonging to the Bamboo has been communicated to us by M. Lafou, whose attention we were directing to the fine prickles with which the stem of the Bambusa Thouarsii is covered. "I had," said he, "in my employ a Chinese who, on seeing me cultivate this Bamboo, assured me that his countrymen used these hair-like prickles when they wished to kill an enemy, without the risk of being discovered. They gather these small needle-like protuberances, and place them surreptitiously on handkerchiefs, beds, or in any place in which they are likely to touch the nose of their enemy; they thus introduce them into the nostrils, where they irritate the membrane, causing a severe cold in the head. This becomes more and more serious; then follows inflammation, then an active suppuration, with intense pain, and thus the victim gradually dies a fearfully painful death, without its being possible to save him. This is unfortunately constantly used, and we have been also assured of the truth of it by Dr. Savatier, a naval medical man, who has lived in China, and is now in Japan.—Ed. André, *Illustration Horticole*.

The Discovery of Coffee.—According to vulgar tradition, the discovery of coffee is due to the mollah Chadelly, whose memory is held in reverence by all true Mussulmans. The pious man, afflicted with sorrow at the thought that he could not keep awake for the performance of his nocturnal devotions, besought Mahomet to indicate some means by which sleep might be chased away. Mahomet, touched with pity, as well he might, seeing that his own honour was concerned, so brought matters about that a herdsman came to acquaint mollah Chadelly of the curious fact that his (the herdsman's) goats could not go to sleep after they had partaken of coffee berries, but kept frisking about all night long. The mollah, taking the hint, at once prepared a good strong dose of coffee. He drank it, and was delighted beyond measure at the result. Not a wink of sleep did he get; delicious sensations crowded on his brain; and his midnight devotions were so fervent that he at once communicated the precious secret to some dervises, who, imitating his example, beleaguered the prophet, now in the seventh heaven of bliss, with unceasing prayer.

THE INDIAN THORNY OR SPREADING ACACIA.

The accompanying sketch represents an Acacia that is found in all hot dry districts, from Arabia to the extreme limits of Southern India; and it differs so slightly in its characteristics from the Acacia nilotica, found in Egypt, that I am inclined to think the two are identical. Spreading much in the same manner that our Thorns do in England, and attaining a considerably greater size, these Acacias form most picturesque objects on torrid landscapes, and when covered with millions of small golden globular flowerets, and full of Mimosa-like foliage, they are at once striking and effective. To the inhabitants of the parched countries in which this Acacia is found, it is truly a great boon, growing luxuriantly where other trees can scarcely exist. It helps to form a portion of the scant supplies of fuel required by the Arabs and Indians to cook their food, and along with the Date Palm forms almost the only shade and tree verdure to be found in countries in which it grows.

To the natives of districts through which the navigable rivers from the great central water-sheds flow, it has a tenfold value; its durable curved limbs, grown naturally to the shape of the ribs of a barge, serve to form, with little labour, the framework of the rude, heavy boats, by means of which the river commerce of those countries is carried on. From the Delta to the cataracts of the Nile, in the vicinity of every Arab village, this Acacia is cultivated on the waste lands of the mounds on which the villages are built. Like all the Acacia family it produces seeds freely, from which it is propagated, and, when once established, its vitality is such that it will flourish even in dust and blowing sand, the roots striking deeply into the earth in search of moisture. This Acacia also furnishes a gum, which is valued by the natives for the purpose of dentistry, and from the bark is manufactured a bright yellow dye for cloth and leather.

Peter Wallace.

A Spreading Acacia.

Plant Sales.—In spite of the old motto, *Caveat emptor*, we think it would be desirable in all plant sales that the plants, bulbs, seeds, &c., should be correctly named, or if this be not practicable, or if a doubt exists, then that this should be openly expressed, so that the purchaser may not be misled. Wherever it could be done it would also be an advantage to have the consignee publicly stated, as that alone would be a pledge of good faith; but we can quite understand that there are certain cases where this cannot with propriety be done. At any rate we believe it would be to the interest of all parties if some reforms were introduced into sale catalogues and sale rooms.—*Gardeners' Chronicle.*

RECOLLECTIONS OF JOHN CLAUDIUS LOUDON.

BY NOEL HUMPHREYS.

(*Continued from p. 534, Vol. II.*)

It will have been seen that Loudon had thrown all his energy and various knowledge into the thorough reformation and replantation of the model farm at Tew; and that to the buildings also he had devoted an equal amount of attention. The cost of these was, however, defrayed by General Stratton, who had given his energetic tenant *carte blanche* as to the extent and character of the structures he might deem requisite. Even the kind of horses for the farm work was most carefully considered; and the Cleveland breed preferred to all others. In short, the principal farm, and all the smaller farms included in the lease, were improved so rapidly that the whole might have been relet at a largely increased rental within two years of Mr. Loudon's taking possession.

The success of the principles and working system thus applied, induced the young farmer to publish an elaborate account of the works he had carried out at Tew, as a successful example of the northern system. He had thrown all his best energies into those improvements, and never lost sight of his great principle that "tillage should beautify the land" and not disfigure it; in short, that the farmer should be at the same time a landscape gardener; because, labour being the highest of all human vocations, it ought to be invested with beauty.

At the beginning of the handsome work describing the improvements at Tew and other places, there are two capital panoramic views of the place; one looking from the house towards the fields, and the other from the fields looking towards the house. The engravings, which are exceedingly well executed, convey an excellent idea of the planting of the entire property, on which the author looked forward at one time to spending his entire life; but this was only a passing determination, and soon gave place to more restless views. The other places described in his work on the improvements at Tew, which was published in 1811, were, I believe, his original plans for improving Lord Mansfield's estate at Scone, and some other examples of his system, carried into effect in England.

One of the many schemes he set on foot during the brief but active period of his residence at Tew, was the establishment of a kind of agricultural college for the suitable education of farm bailiffs and others engaged in agricultural pursuits. He gave some account of this college in a pamphlet entitled, "The Utility of Agricultural Knowledge to the Sons of Landed Proprietors, &c., with an Account of an Institution formed for Agricultural Pupils in Oxfordshire, &c." It is in his introduction to this work that he alludes to his determination to have recourse to farming as a permanent source of income, lest by any future attack of disease he should be prevented from the more active duties of his profession as a landscape gardener.

His activity both of mind and body prevailed, however, over the drawbacks of the lameness and the disabled arm, and he continued, despite these difficulties, to follow his old profession; having between 1809 and 1812 laid out several places in England, in Wales, and even in Ireland. In the meantime he had given up the lease of Tew upon very advantageous terms, which were highly creditable both to landlord and tenant; and finding himself master of upwards of £15,000 as the result of his unceasing labours in various fields of honorable enterprise, he determined for awhile to take a period of rest from his usual avocations; but not with a view to inactivity. The waning fortunes of the first Napoleon, among the snows of Russia, towards the close of 1812, opened portions of the continent to English travellers, and in March 1813 Loudon determined at once to avail himself of this opportunity to gratify his long-cherished wish to see the countries of the continent, at all events such portions of them as he might then find it possible to traverse.

With his peculiarly liberal cast of mind, Loudon had long fretted against the narrow sphere of observation and study within which he was confined in the limited extent of the British Isles; especially at a time when national vanity, combined with obstinate insular prejudices, so cramped the range of English thought in general, that anything like a fair judgment of continental arts, sciences, taste, institutions, and manners could not be arrived at in England by men of routine education, holding the narrow stereotyped opinions so generated. It was under the influence of such a phase of national thought that England had joined, heart and hand, in a kind of crusade against the right of the French people to choose their own form of government—a crusade which Loudon regarded as a more benighted and in every way darker and more ignorant proceeding than the sanguinary expeditions to the Holy Land of the middle ages. He looked forward with great glee, as I have heard him say, to this opportunity of casting off the confining coil of insular thought, and finding out for himself sufficient reasons for adopting wider and more cosmopolitan opinions than those he had found prevalent among all classes in England, and indeed in Scotland also, as he freely confessed.

With such feelings and aspirations he started from Harwich on the 16th of March, 1813, in a small sailing packet, the discomforts of which were considerable; but he had no choice, for steamers were at that time not even a vision of the future in their present comfortable form, though a few tentative experiments had been already made by enterprising men, who were deemed little better than poor infatuated lunatics by their hard-headed contemporaries. He arrived at Gottenburg, in Sweden, after a tolerably fair passage, in so far as weather was concerned; and was much struck by the novelty of the scene which presented itself, and which at that time wore so many quaint national peculiarities which modern facilities of intercommunication have since so much toned down, that a traveller must go very far afield to meet with sights and scenes as strikingly novel as those which in 1813 unfolded themselves to Loudon on his landing in Sweden. He was much struck with the advanced state of two great elements of civilization in that country—road making and education; in both of which he considered that little monarchy far in advance of England, especially in the last named—education; inability to write, even in the lowest grades of the social scale, being the exception instead of the rule, as it then was in England, which, as Loudon always regretted, was far behind Scotland in that respect, and indeed still is so, the registrar-general's recent returns of marriages exhibiting *marks* instead of signatures to the amount of nearly one-half on the *ladies'* side, and one-third on that of the *gentlemen*. Many things in Sweden reminded our traveller of Scotland, and he felt convinced that the Norse element was even stronger in the northern portions of the highlands than had ever been suspected. He often expressed regret that he did not remain longer in Sweden, in order to study the national institutions and the manners of the people more thoroughly; and still more specially the magnificent scenery, from which he had expected to derive many hints for the enlargement of his theories of picturesque landscape gardening: but he became so overpoweringly anxious to visit the scenes of the great European war that was then rapidly culminating in the overthrow of the first Napoleon and his hosts, after the disastrous invasion of Russia, that he could not resist the temptation of pushing forward at once, leaving undone much that he had intended to accomplish during a short stay in Sweden.

Incited by this irresistible desire to witness some of the last aspects of the gigantic war-struggle, he pushed on to Konigsberg at once, by way of Memel, and arrived there on the 14th of April. On nearing that place he began, as he relates in his journal, to find everywhere the devastating traces of war, all of them more or less terrible to the eye of one coming from a country which for ages had not known the horrors of invasion. Skeletons of horses, whose flesh had been devoured by wolves, still common in the Baltic provinces, lay bleaching where they had fallen, the victims of famine or battle. The roads were broken up; cultivated fields trodden into wastes; and gardens and country houses which he would have so much delighted to see in their trim and well kept completeness, as models to study, he found but too often reduced to shapeless wrecks. So that as a horticulturist and landscape gardener he found but few things to study professionally; but the passages in his journal relating to the time show how deeply, as a philanthropist, he was interested in the great European crisis.

At Ebling, a small fortified town, he was much struck by the scenes in the narrow streets, which were, he says, completely jammed with the goods and cattle of the people of the surrounding country, who had poured into the town for protection from the foraging parties of a part of the French army which was then passing within a few miles; devouring or spoiling, in self-defence, all that came in their way. Near Marienburg he passed through a bivouac of Russian troops, who had by no means the soldierlike air that he had expected in men who had so successfully repulsed the great French armies, and which had been spoken of as such splendid soldiers by English newspaper writers. Near Danzig he was much interested in a new kind of architecture, by which, as he described it, "houses were made by sinking down, instead of raising up." This process was very skilfully performed by a horde of Cossacks belonging to the Russian camp on the hills near Danzig. It was effected by making excavations in the deep, loose sand, of which those drift-hills are chiefly formed, the approach being by a well managed declivity, and the roof being formed of branches of trees raised above the excavation in the form of a tent.

On approaching Berlin, he found the long avenues bordered with trees, through which the city is reached, thronged with a continuous train of foot and carriage passengers, and waggons piled with luggage, hastening to the city for protection; and as his view of this busy and exciting scene was taking place by moonlight, Loudon, whose eye had long been cultured to a full appreciation of the picturesque, was very much struck with what he saw; and gave a detailed and very graphic account of it in his journal, which he never neglected, but which, from the large admixture of strictly private matters, was not calculated for publication. He remained in Berlin from the 14th of May to the 1st of June; receiving anything but a favourable impression of the Prussian capital. The dirtiness of the streets, the comfortless character of the houses, the fearful stenches consequent upon bad drainage, or rather no drainage at all, and the utter absence of any public buildings worthy of notice, excepting perhaps the arsenal,* made him really anxious to quit a disagreeable place, that had nothing metropolitan about it except its size and its dirt; the splendid side of other metropolitan cities being entirely absent in Berlin. He therefore pushed on to Frankfort on the Oder, where he was well received by a party of German officers who had never seen an Englishman, and with whom this country was then extremely popular, on account of the lavish subsidies of British money, by means of which they had been enabled to carry on their share of the great European crusade against France. From thence he proceeded through Posen to Warsaw, where he saw many things that greatly interested him, especially many ancient buildings in a curious transition style of architecture which is only to be met with in Poland; and which he was enabled to study very carefully, perhaps more so than he really desired, as he was detained for three entire months, on account of a trifling informality in his passport, at the little town of Tykcozyn, from which, however, he was allowed to make excursions into the surrounding country, of course under armed escort.

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* The museum, town hall, and other buildings of some beauty, are of recent erection.

(*To be continued.*)

THE FLOWER GARDEN.

CORTUSA MATTHIOLI.

THIS handsome plant is closely allied to the Primulas. It very much resembles Primula cortusoides, and has large leaves like those of P. mollis. The flowers, which appear in early summer, are of a deep purplish-crimson, and are produced in loose drooping umbels on stems from 9 to 15 inches high. The corolla is funnel-shaped, with pointed divisions. It should be grown in sheltered nooks in the rock garden, or on sheltered borders, in moist loam or peat, mixed with about a fourth part of pounded slate. It may be multiplied either by division in spring or from seed, which should be sown as soon as it is gathered, and placed in a shady position. The seedlings should be wintered under a frame and will flower the ensuing year.

Cortusa Matthioli (after Vilmorin.)

BULB NOMENCLATURE.

MR. EDITOR,—I have had such a horrible dream! Possibly you may not know, but I speculate in a few bulbs—say half-a-crown's worth—every autumn, and I don't always purchase from the same merchant, but sometimes from one and sometimes from another, as it suits my fancy. The consequence is, that they have all got me in that dreadful book which they call their "Register," and catalogues and sundry other documents pour upon my devoted head every season, "thick as the leaves in Vallambrosa." The "Autumn Guides for 1872" that I have received since the beginning of September are, like their contents, "too numerous to mention." Some of the firms are not content with sending me their catalogues, but, if I do not send them an order in a few days, I receive such a touching epistle as the following:—

"My *dear* Sir!—Not having received this season your customary order for bulbs—"

Why, four years ago, I sent to this firm for one shilling's worth of Croci (*Croci* is right, I have South Kensington authority for it), and I never had anything else before or since. Well!

"Not having received your order, we take the liberty of reminding you of the same, lest it may have escaped your attention. Perhaps you are not a buyer of bulbs this season. Perhaps you were not satisfied with the goods supplied on a former occasion. Perhaps you have given up gardening pursuits. Perhaps you will not be at home at the blooming season. Perhaps family afflictions have caused you to retire from such occupations for a time. Perhaps you are deceased, in which case kindly let us know by return, and we shall take your name off our 'Register'!" In fact, they suggest no end of peradventures.

The other night, after some serious consideration as to the propriety of bolting off during the bulb season to the Norway fisheries, or any other *terra* where catalogues are *incognita*, I went to bed and fell into a troubled sleep—

And as I slept, I dreamed a dream.
And, lo! I stood upon an immense plain—

a sort of Bog of Allen, and instinctively understood that I was in the Spirit Land of the Bulbs; for all around me I could perceive the shadowy forms that represented the various sections, groups, and divisions of those awful catalogues, compounded into genera, species, and sub-species, varieties, sports, and many other distinctions, which, if they wouldn't, ought to puzzle a Dutchman. And before me arose a figure, as it were, of a Priest of the Bulbs, who brandished a fat catalogue. Wiping his spectacles, this presiding genius emitted a huge preliminary "Hem!" and accosted me—

"Sir! There hath been great confusion in the nomenclature of everybody and everything. Clusius, Haworth, Herbert, and Parkinson"—

But here a great rushing noise interrupted him, and he was immediately swept out of sight, as the Spirits of the Hyacinths whirled round me in a rapid waltz. By all that is wonderful, what a motley throng! Here was Baron Rothschild embracing the Sultan's Favourite, Howard doing the amiable to Adelina Patti, Uncle Tom pirouetting with Anna Bolena, Voltaire embracing Dolly Varden, the Duke of Wellington whirling past in the arms of Netherlands Glory, Cavaignac waltzing with the Beauty of Waltham, Linnæus with the Princess Royal, Victor Emmanuel with Mrs. Beecher Stowe, Telemachus with Queen Victoria, Prince Albert with Madame Van der Hoop, Sir Edward Landseer with Cleopatra, and Charles Dickens with Lady Havelock.

Dante in Inferno never saw such a combination. Of a verity the Bulb Priest was right. "There hath been great confusion in the nomenclature." So I turned mine eyes aside in my dream, and beheld advancing a sweet procession of those darling spring flowers, the Narcissi, or as they were called in the good old times, when a spade was a *spade*, and not a *Pala longa manibus pedibusque*—the dear Daff-a-down-dillies. But they seemed sad and unhappy, and approached me with tears and lamentations.

"Look at me!" sighed a blooming beauty whom I had known from my childhood. "They call me now Pseudo-Narcissus aureus maximus flore pleno sive roseus Tradescanti, and have doubled my price accordingly."

"Who will know me!" cried another, "as a Corbularia."

"Mercy on me!" said old double Daff, "who'd a' thought I were Telamonius plenus!"

"Bother it all!" growled our ancient friend, Butter and Eggs. "They have been and nicknamed me Incomparabilis albus plenus aurantiacus!" While, one more unfortunate, a sweet little creature, sighed as if her little heart would break and murmured, "What have I done to be called Tros poculiformis!"

"Verily, verily," said I, as I shut my eyes upon the melancholy group—"There hath been *very* great confusion in the nomenclature."

When I looked up again, lo! my old favourites the Tulips were going, going to the highest bidders. A Rhinoceros went for 2½d., and a Keizerskroon for 3d.; the Comte de Mirabeau only fetched 2d., the Prince de Galitzin went for the same money. Queen Victoria was knocked down for 1d., General Garibaldi went at 2½d., Maria de Medicis at 3½d., the Duke of York at 1½d., Molière at 3d. I am sorry to say that the Markgraaf van Baden was sold for 1½d., the Bride of Haarlem in pure white could only command 6d., and Cottage Maids were bought up with facility at half-a-crown a dozen.

"Of a truth," repeated I, turning away with a sigh—"There hath been *particularly* great confusion in the nomenclature."

But I was suddenly aroused by a great uproar, and looking round, beheld the plain covered with Lilies, who, despite their lovely aspect, were in violent contest. They had been ordered to classify themselves and they wouldn't. So they had quarrelled over it, and at it they went trumpet and perianth.

"You're an Eulirion!" shouted one.

"You're an Isolirion!" bawled another.

"I'm the original Lancifolium!" said a third.

"You're nothing of the sort!" retorted his neighbour. "You're only an antiquated Speciosum!"

"Make way for Aurantiacum croceum!" was the cry of another.

Upon this, the Turks' Caps commenced an awful row, old Purple declaring that he was the only Martagon, and that the rest were impostors; and the others, joining in the fray, there was presently an indescribable hubbub, in which all order was lost in the Babel of Sounds.

Far above the turmoil I heard again the voice of the Bulb Priest shouting, "There hath been great confusion in the nomenclature"—and so I awoke, murmuring to myself, "By the depths of the Zuyder See, there hath, indeed, been great confusion in that direction." D. G.

Eden Lodge.

A VEGETABLE MARVEL.

On the eastern spurs of the Rocky Mountains there grows an alpine plant of extraordinary beauty. In habit it resembles our common Wild Thrift, or Sea Pink; but its rosettes of leaves are much larger (4 or 5 inches across). From the base of these, and scarcely an inch above the ground, a profusion of blossoms arise; each flower being three inches or more across, and of the loveliest shaded pink and rose colour imaginable. The whole reminds one of a large Mesembryanthemum, with ten or twelve very broad petals, forming compact, circular flowers. The thick, woody rootstock of this curious perennial descends to some depth among the fissures of rocks, or stony, well-drained soil which it inhabits. Its tenacity of life is something wonderful. After being immersed in boiling water, and afterwards pressed as a specimen for the herbarium for more than eighteen months, a plant has been known to grow and flower. Its root is eaten by some of the Indian tribes, who esteem it very highly. The plant is Lewisia rediviva, an ally of the Portulacas and Calendrinias. We have had it two seasons, but received our main supply last year. It grows and flowers freely, and is perfectly hardy.

York. JAS. BACKHOUSE.

[A figure of this singularly beautiful plant will be found at p. 701 of the first volume of THE GARDEN.]

PLANTS IN BLOOM ON NEW YEAR'S DAY.

In addition to the plants enumerated as being in flower at Mr. Ellacombe's on Christmas-day, the following were in bloom here on January 1st, viz.:—Laurustinus, Pyrus japonica, Erica carnea and Seerlei, Tritoma Uvaria, East Lothian Stocks (three colours), Helleborus fœtidus, Violas (Dickson & Co.'s varieties), Russian Violet, Colchicum (double striped lilac and white, the leaves of the single varieties are 1½ inch above the ground), Crocus odorus var. longiflorus, five varieties of single Primroses, nine sorts of Polyanthus, two sorts of Oxlip, one Cowslip, Primula nivalis, Carnation (rose self), Dianthus multiflorus (white and rose) Aster ericoides, Hepatica (single blue, white, red, and double red), common pink and scarlet China Roses, Daisies. The list would have been considerably longer had we not resolved to have every corner of the garden in first-rate order by the last day of the year—a resolution which the weather enabled us to carry out; and owing to circumstances the gardener, in his extreme activity, cut over the herbaceous borders, an operation I always prefer to do with discretion myself. Snowflakes and a Snowdrop were out in the first week of January. The bare places on the banks were beautifully green with Chærophyllum; in fact this plant has never rested this season. In a neighbouring garden I observed Eccremocarpus scaber in flower. F. J. HOPE.

Wardie Lodge, Edinburgh.

Plants in Flower in Sussex.—The following are now in bloom in the garden at Hawksfold, which is sheltered to the north and east by high hills, and open to the south and west. It is about 300 feet above the sea level. Of scarlet Rhododendrons, several kinds are in full flower, as are also Snowdrops, Crocuses, Primroses, Christmas Roses, Laurustinus, Czar Violets, Prince of Wales and Gloire de Dijon Roses, white and purple garden Anemones, Daphne Mezereum, Wallflowers, Stocks, Sweet Rockets, yellow Alyssum, Andromeda, Erica carnea and a white Heath, Arbutus, Furze, Myosotis dissitiflora, Escallonia rubra, and Iberis sempervirens. A large Myrtle under the shelter of the house, but not trained, has many flower-buds on it, some partly expanded. A variegated Camellia in the same situation has also partly expanded its flower-buds. The following wild flowers are also in flower, viz., white Periwinkle, Daisies, Buttercups, and Ragwort.—S.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

The Winter Heliotrope.—A large patch of Tussilago (Petasites) fragrans is now in full bloom in our garden, and quite perfumes the air as one passes along the walk which is near it. Anything that blooms at this "unseasonable" time of year is surely doubly valuable. I saw it far above the level at which perpetual snow lies on the slopes of "Sulu Tind"—the highest peak of that part of the central range of the Norwegian mountains, which is known as the "Fille Fjeld." We have lots of spring flowers in bloom, and a climate of almost summer-like mildness.—J. BACKHOUSE, *York.*

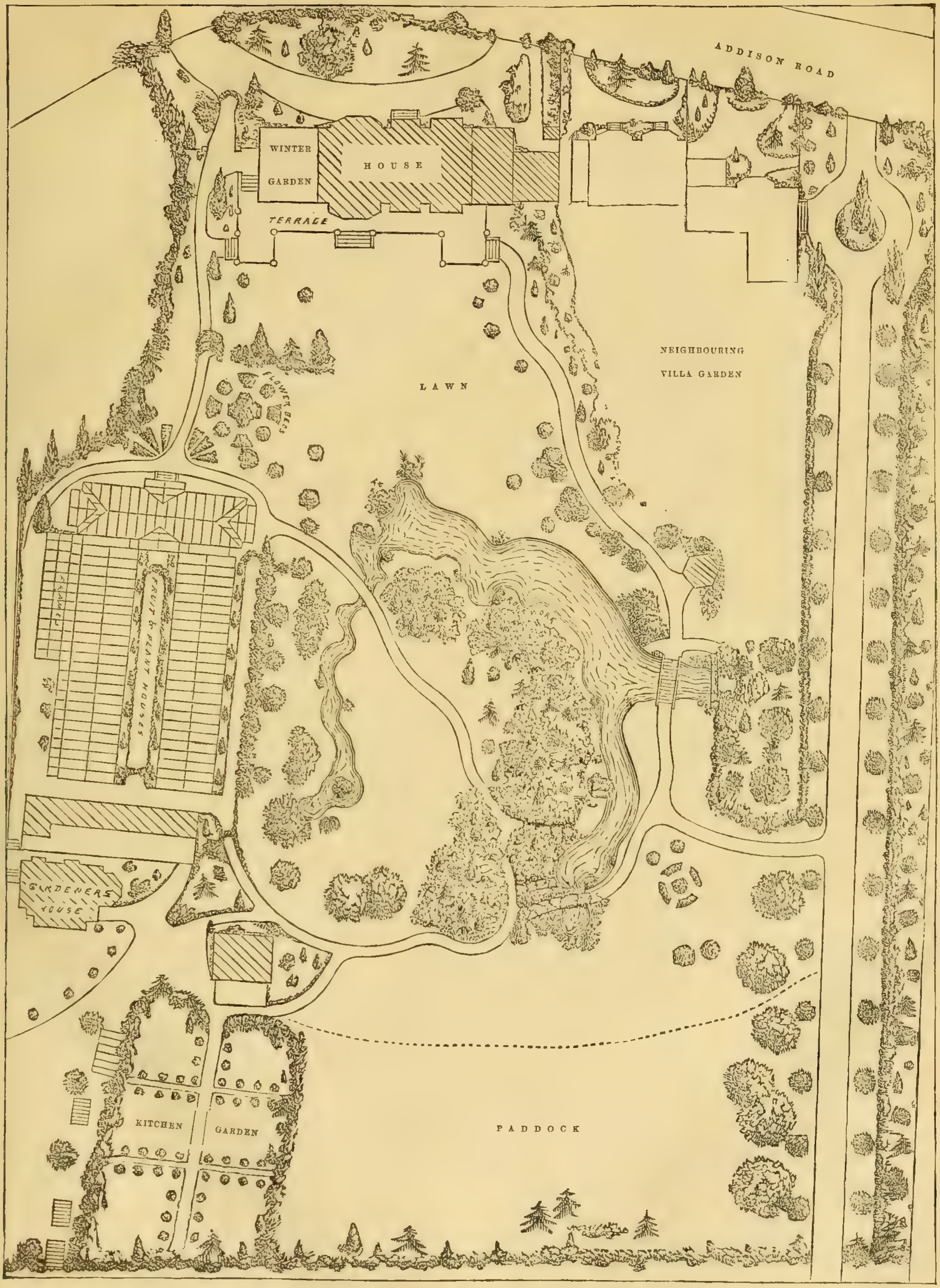
Jasminum nudiflorum.—Growing against the wall of one of a row of cottages that face the road leading from Feltham to Bedfont is a large neatly trained plant of this yellow-flowered winter Jasmine. This of course is no novelty, but what I desire to note is the spirit of imitation evoked amongst the other cottagers, all of whom have now a small plant trained on to the front of their habitations. As this Jasmine is easily propagated by means of layers, perhaps the more fortunate cottager kindly put his neighbours on an equality with himself. The large plant has been in flower for six weeks, and when I saw it on the 8th ult. it was as bright as ever.—A. D.

Myosotis dissitiflora.—Strong plants of this beautiful spring flower from seed sown the middle of July, and now growing on a south border, are already bursting their flower-buds, and with a continuance of the present mild weather will soon be a mass of celestial blue. This Myosotis should be propagated by means of seed, only, as the smallest seedling plants will stand both wet and frost much safer than the largest of old stools, and any reliance upon old plants, or on plants raised from side shoots, is almost certain to end in disappointment. Seed should be sown not later than July, and at all times in boxes or pans, so as to secure the seedlings against drought on the one hand and slugs on the other. If some of the strongest plants are potted up into large sixties in October and put into a cold frame, they will assist in making both windows and greenhouses gay, from Christmas onward.—A.

GARDEN DESIGN.

PLAN OF THE GARDENS AT OAK LODGE, KENSINGTON.

We have often spoken of the beauty of the gardens at Oak Lodge, and of the striking landscape effects obtained there, in what may be termed a town-garden; we gave a page view of one of the most striking scenes in the gardens in Vol. I., p. 125, and now we issue a plan of the place, engraved from measurements taken on the spot. The plan, as will be seen, has many good points, though the effect of the ornamental water is, in reality, very much broader and better than it would seem to be, judging from the plan, which, of course, also fails to show the gentle and natural-looking undulation of the surface of the ground. The way in which the houses are grouped, so as to get a good many on a small space, and thus prevent them from encroaching too much on the space required for ornamental gardening, is excellent. A well-stocked conservatory-like structure is seen from the house, and behind it, in two parallel lines, run well-built ranges of plant and fruit houses. The flank of this group of houses that looks towards the garden is hidden by a high bank of shrubs and low trees. The space between the two lines of houses forms an excellent position in which to place greenhouse plants out of doors during the summer months. The kitchen garden, excellent gardener's house, &c., are also so placed as not to mar in any way the quiet beauty of the "home-landscape." Attached to the house is one of the most beautifully finished and well furnished little winter-gardens in England. The breadth of terrace is nicely proportioned to the position, and better than all there is quite an open little lawn, across which one gets the most charming views of the rock gardens, water, and richly-furnished shrubberies. The walks, it will be seen, are well concealed from the house, and are everywhere unobtrusive. The blank space represents the garden of an adjacent villa, beyond which an avenue leads through the grounds of Oak Lodge from the Addison Road to Holland Park, which is adjacent. The design of the garden is the work of Mr. Robert Marnock, and the place is always in the best condition under the management of Mr. Wilkie. We cannot conclude without acknowleding the happy and tasteful manner in which the really picturesque rockwork here has been executed by Mr. Pulham, of Broxbourne; its effect from every point of view is of the happiest kind.



PLAN OF THE GARDENS AT OAK LODGE, KENSINGTON.

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(*Continued from p.* 557, *Vol. II.*)

PLANTS USED FOR FORCING.

Prunus Cerasus fl. pl.—This is a particularly good subject for forcing. It is propagated by budding or grafting on Prunus Malaheb or P. Myrobolana. Grafts made on stocks of the Wild Cherry soon go back. Specimens for forcing should have been previously grown in pots for several years, otherwise the result will not be satisfactory. During the first year they should be pruned so as to form a head; after this, they should not be further pruned. They should be placed in a room sheltered from frost for some weeks, having been previously exposed to frost, and should not be brought into the warm room before January or February, then they will soon come into bloom. They may be forced several years in succession. Prunus Avium fl. pl. is of little value for forcing.

Prunus Padus, L. (Cerasus Padus, D. C.)—This species is not so good for forcing in a room, as the specimens grow to too great a size before they come into flower; however, shoots cut and kept with the ends in water during the summer will bloom in December or January, and with greater success in proportion to the coldness of the water. Accordingly it will be found the best plan to throw a piece of ice into the vessel every day.

Ribes sanguineum and R. speciosum.—Of the numerous species of the genus Ribes, only these two North American kinds can be recommended for forcing. Of the first, which produces its deep red flowers in clusters, like the Currants, there is also a variety with double, and one with white flowers. R. speciosum more resembles the Gooseberry in its habit, but grows taller and has blood-red flowers. For both, the treatment, pruning, and propagation are the same as for Diervilla rosea. In forcing, they should not be placed in the warm room, but should be kept in a cool sunny one, with a temperature of from 43° to 45° Fahr., and in fine weather should receive plenty of air. Specimens treated in this way will bloom in the beginning of April, and may be forced annually for some years.

Robinia hispida.—This favourite ornamental shrub is distinguished by its large and handsome clusters of flowers. For forcing, specimens grafted on Robinia Pseudacacia, which have been potted for at least a year, should be selected, and placed in a cool room in January. They are afterwards removed to the warm room for flowering. In cold climates, where the wood does not ripen sufficiently, they do not answer for forcing.

Roses.—The Rose is one of the most favourite flowers in almost every room-garden. The continuously blooming kinds (Rosa indica and its varieties, to which may be added the Tea Roses and Rosa Lawrenciana) succeed best on their own roots in a cool double window, where they bloom in winter frequently better and more abundantly than in the plant-house. The best of the so-called continuously blooming kinds, or the hybrids raised between R. centifolia and the varieties of R. indica, should not be forced on their own roots, but specimens budded on the Briar should be employed. They should not be budded on stocks taken directly from the woods, but only on stocks of R. canina which have been grown in nurseries or on Manetti stocks. The stronger and the better rooted the stocks are the better will be the result. In spring the cultivators should obtain from a nursery dwarf worked specimens, grow them on through the summer in pots, and treat them on the same principles as the other woody plants which are recommended for forcing. They should not be pruned in summer, with the exception of the suckers on the stock, which should be removed, and in spring the pruning should be limited by cutting back the shoots to strong buds. After blooming the plants should be kept dry and treated for the ripening of the wood like other shrubs. After they have endured a little frost they should be removed into their winter quarters. From the beginning of December they should be placed in a room sheltered from frost and watered. All the superfluous shoots should be pruned away, and the rest cut back to two or three buds, according to their strength. When the buds begin to swell, the plants should be removed to the sunniest part of the room or into a double window, where they will have a temperature of from 43° to 48° Fahr. After the buds have started here the strongest specimens should be removed to a sunny window in the heated room, in order to bring them into bloom first. Those who wish to bud their own Roses should get some stocks from a nursery in spring, and pot them. In the end of July or the beginning of August they can bud them with dormant buds. The further treatment resembles that usually employed with all budded Roses, except that when they are placed in a cool room, the stocks should be cut off above the bud, if the bud has taken. They will bloom abundantly in the first winter. After blooming, the plants should be placed in a well-lighted part of a room, sheltered from frost, and afterwards set in the open air. If necessary, they should be transplanted, and prepared for forcing again the next winter. They should be pruned either in spring, after blooming, or in summer. If possible, they should not be allowed to bloom a second time in summer, but should have their wood well ripened for winter flowering without being exhausted by a second blooming.

Spiræa prunifolia, fl. pl. and **S. Reevesiana fl. pl.**—Of all the numerous species of Spiræa recommended for forcing, these two kinds, which have double white flowers, are by far the finest. The treatment, propagation, &c., should be the same as those for Deutzia.

Syringa chinensis, S. persica, and **S. vulgaris.**—Next to Roses, the Syringas are more frequently forced than any other deciduous shrubs, on account of their handsome, luxuriant, and fragrant bloom. Specimens of S. chinensis and S. persica intended for forcing should be grafted on low standards. The best stocks are Ligustrum vulgare or Syringa vulgaris. The plants should be taken up in autumn with good balls, and potted in the same way as has been directed for other shrubs which are to be forced. They should not be pruned before forcing, unless they show too much wood, in which case the weakest shoots should be removed. In the middle of November they should be placed in a cool room, sheltered from frost, and in the first fortnight in December some of them may be removed to the warm room, for the earliest bloom. These will come into flower by Christmas or the beginning of the new year. If well taken care of, the same plants may be forced again after two years, but in order to secure a strong growth they should be closely cut back in the spring after they are forced. S. vulgaris is better for forcing in the form of large specimens in plant houses than for rooms. Shoots of it, however, cut in the middle of December and placed in water will bloom well.

Viburnum Opulus, var. roseum.—Plants of this intended for forcing in winter should be taken from the nursery in the previous spring and potted. They are as easily forced as Syringas, and may be placed in a cool room at the same time, and also later on in a heated room. When placed in a cool room, the summer's growth should be cut back to a few buds.—*E. Regel.*

CAMELLIAS IN WINDOWS.

A CORRESPONDENT of the *Farmer* gives the following encouraging account of his experience with Camellias as window plants:—I had capital success with Camellias last winter. These are generally failures in the dwelling-house, as the buds drop just about the time they should open. The window of an upper hall was devoted to Camellias and a few other plants; twice during the winter the earth in the pots froze, and twice they were removed to a warm room to prevent freezing. In February the buds began to show signs of opening, and such plants as were ready to flower were taken to the dining-room, where they rapidly came into full bloom. Those who have no greenhouse can have Camellias, if they will only take a little trouble; and so magnificent a flower is worth a great deal of trouble. Nice, moderate-sized plants can be bought at from 5*s.* to 15*s.*, and upwards. Keep the plants out of doors in a shaded place all summer, taking care that they do not get too dry and that no insect eats the leaves. I don't know what one it was, but some insect disfigured the leaves of one of my plants. When frosty nights come, remove the plants to the house, to a room without a fire, and keep the window open whenever it is not too cold. Water is needed, and during the winter wash the leaves with a sponge or soft cloth every week or two. A moderate freezing will not hurt the plants, unless the buds are too far advanced; but it is easy to prevent it altogether by removal to a slightly warmer place during very cold nights. As soon as the buds swell enough to show the colour of the petals, the plants may be removed to a sitting-room where their flowers can be enjoyed. Soon after the flowers have fallen, the Camellia makes its wood growth. At this time it may be repotted, giving it fresh soil in the same pot, if a cramped condition of the roots does not show that a larger one is needed. Fresh soil, such as decomposed sods, is as good as any of the mixtures of peat, sand, and other things recommended by the books. Prune into shape if necessary, and the plant will push its new shoots and grow rapidly. During the time it is growing, give it plenty of water and all the light possible. Set the plants in the open air as soon as frosty nights are over. The treatment is simple enough, and the success most gratifying.

The Forget-me-Not.—It is not sufficiently known that the summer Forget-me-Not will root in any vessel of water in a dwelling house, and if kept in a good light will go on flowering for a long time in succession.—W. S.

THE FRUIT GARDEN.

COMPARATIVE POPULARITY OF DIFFERENT KINDS OF HARDY FRUITS.

SOME time ago Mr. R. Varden, of Pershore, suggested to us the desirability of getting lists showing the proportions of hardy fruit trees raised and sold in various parts of the country. Such lists Mr. Varden rightly considered would be a good index to the kinds found to be most suitable in each district; and thanks to the courtesy of Mr. Richard Smith, we are now enabled to give the comparative numbers of one of the finest collections of hardy fruits ever brought together, of which in all 60,000 young trees are trained every year. The numbers represent the rows in which the trees are planted, and these rows are, for purposes of convenience in cultivation, exactly of the same length throughout the nursery, and each contains the same number of plants.

APPLES.

EARLY KINDS.	
Brown's Codlin	9
Devonshire Quarrenden	33
Duchess of Oldenburg	6
Dutch Codlin	9
Early Harvest	9
Early Joe	7
Early Nonpareil ...	12
Ecklinville Seedling..	14
Emperor Napoleon ...	21
Hawthornden	36
Ingestre Red	12
Irish Peach...	19
Juneating	9
Kerry Pippin	21
Keswick Codlin	25
Lady Apple	3
Large Yellow Bough..	1
Lord Suffield	186
Manks Codlin	9
Margaret	4
Oslin	21
Red Astrachan	24
Reinette Jaune Hâtive	2
Ringer	15
Stubbard	1
SummerGoldenPippin	7
Vineuse Rouge	1
White Transparent .	23
Wormsley Pippin ...	7
MEDIUM SEASON.	
Adams' Pearmain ...	8
Aromatic Russet ...	7
Ashmead's Kernel ..	11
Ashmead's Kernel Improved...	18
Bedfordshire Foundling	7
Bess Pool	11
Blenheim Orange ...	125
Cellini	65
Claygate Pearmain ...	5
Cox's Orange Pippin	72
Cox's Pomona	21
Downton Pippin ...	4
Emperor Alexander...	16
Fearn's Pippin	12
Flanders Pippin ...	14
Forge	11
Gloria Mundi	5
Golden Noble	9
Golden Reinette... ...	16
Golden Spire	17
Golden Winter Pearmain	40
Gravenstein	18
Grenadier	7
Hawthornden, New ..	19
Lord Clyde	7
Lord Derby...	7
Lord Grosvenor... ...	12
Magnum Bonum ...	8
Maltster	30
Margil	19
Melon Apple	8
Mére de Mènage ...	16
Nelson Codlin	5
Nelson's Glory	16
Norfolk Bearer	13
Paradise Pippin	18
Pennington'sSeedling	5
Pine Apple Russet ...	8
Pitmaston Nonpareil	4
Ribston Pippin	84
Rymer	9
Sam Young...	5
Stirling Castle	47
Scarlet Pearmain ...	7
Wadhurst Pippin ...	4
Waltham Abbey Seedling	8
Winter Majeting ...	4
Yorkshire Greening..	20
LATE KINDS.	
Alfriston	17
Baron Ward	3
Beachamwell	5
Beauty of Kent... ...	13
Betty Geeson	2
Braddick's Nonpareil	8
Brownlee's Russet ...	1
Calville Blanche ...	17
Court Pendu Plat ...	24
Court of Wick	36
Dumelow's Seedling	50
Dutch Mignonne ...	8
Fairy Apple	6
Golden Pippin	13
Gooseberry Pippin ...	5
Grange's Pearmain ...	4
Hanwell Souring ...	7
Hughes'GoldenPippin	6
Keddlestone Pippin...	6
Kirke's Fame	5
LambAbbeyPearmain	4
Lemon Pippin	1
Lewis's Incomparable	18
Mannington's Pearmain	4
New Northern Greening	2
Northern Greening ...	3
Pearson's Plate	4
Pott's Seedling	9
Reinette Du Canada..	18
Scarlet Nonpareil ...	5
Small's Admirable ...	4
Stamford Pippin . .	7
Syke House Russet ...	11
Tower of Glammis ..	2
Warner's King . .	12
Winter Pearmain ...	4
Wyken Pippin	6
VERY LATE KINDS.	
Allen's Everlasting ...	2
Annie Elizabeth	6
Boston Russet	3
Cockle Pippin	10
Cornish Gilliflower ...	10
Coe's Golden Drop ...	2
Duke of Devonshire ..	30
French Crab	2
Forfar Pippin	12
Golden Harvey	15
Lodgemore Nonpareil	3
Lord Burghley	20
Moss's Incomparable	1
Newtown Pippin ...	3
Nonpareil	6
Norfolk Beaufin... ...	9
Northern Spy	28
Prince Albert	4
Puckrupp Pippin ...	8
Reinette Van Mons ...	4
Rinahkowski	8
Royal Russet	1
Rushock Pearmain ...	8
Serinkia	15
Spring Ribston	3
Sturmer Pippin... ...	36
Sweeny Nonpareil ...	2
Uelner's Golden Reinette	2
Winter Peach	21
Winter Queening ...	2

CHERRIES.

Adams' Crown	16
Archduke	16
Belle Agathe	15
Belle de Choisy	12
Belle d'Orleans	9
Bigarreau	50
Bigarreau Jaboulay ...	8
Bigarreau Napoleon...	28
Black Eagle	20
Black Tartarian... ...	23
Bohemian Black Bigarreau	5
Bowyer's Early Heart	7
Bedfordshire Prolific .	27
Carnation, Coe's Late.	6
Downton	18
Duchesse de Palluau .	6
Early Lamaurie	3
Early Lyons	3
Early Purple Guigne .	9
Elton	15
Florence	8
Frogmore Early Bigarreau	7
Gloire de la France ...	6
Governor Wood	42
Guigne Trés Précoce .	3
Impératrice Eugénie .	9
Jeffrey's Duke	7
Joe-o-Sot	1
Kentish...	4
Knight's Early Black.	33
Kirtland's Mary ...	4
Large Black Bigarreau	6
Late Duke	10
Ludwig's Bigarreau ..	6
May Duke	180
Morello	130
Morello de Chasmeaux	8
Noir Précoce de Strass	6
Nouvelle Royale ...	7
Ox Heart	6
Planchoury	6
Reine Hortense	5
Rival	5
Rockport Bigarreau...	3
Royal Duke	6
The Doctor	6
Transparent	4
Waterloo	6
Werder's Early Black	9
White Heart...	26

NECTARINES.

Albert Victor	11
Balgowan	4
Bowden	8
Cricket	12
Downton	20
Early Newington ...	4
Elruge	43
Hardwicke Seedling...	35
Hunt's Tawny	15
Large Elruge	6
Lord Napier	13
Murray	8
Oldenburgh	11
Old Newington	3
Pine Apple	24
Pitmaston Orange ...	37
Prince of Wales ...	2
Rivers' Orange ...	30
Roman	5
Stanwick	4
Stanwick Elruge ...	8
Victoria	23
Violette Hâtive	35
White	6

PEACHES.

Abec	2
Acton Scot	8
Alexandra Noblesse...	12
Barrington	50
Bellegarde	60
Bourdine	3
Canary	7
Chancellor	1
Comet	5
Crimson Galande ...	6
Crawford's Early ...	5
Dagmar	7
Dr. Hogg	7
Early Alfred	8
Early Anne	2
Early Albert	12
Early Ascot	5
Early Beatrice	12
Early Grosse Mignonne	6
Early Louise	13
Early River...	12
Early Savoy	8
Early Silver	15
Early York	40
Early Victoria	9
Golden Purple	5
Golden Rathripe ...	5
Gregory's Late Peach	6
Grosse Mignonne ...	45
Hale's Early	21
Late Admirable	17
Lord Palmerston ...	9
Lady Palmerston ...	9
Magdala	6
Marquis of Devonshire	4
Noblesse	65
Nectarine Peach ...	6
Padley's Seedling ...	3
Prince of Wales ...	13
Princess of Wales ...	13
Red Magdalen	16
Rivers' Early York ...	20
Royal Vineyard ...	3
Royal George	100
Salway	6
Stirling Castle	7
Stump the World ...	9
Teton de Venus ...	2
Thames Bank	2
Violette Hâtive	40
Walburton Admirable.	30

APRICOTS.

Alsace ... .! ...	4
Beaugé	1
Breda	2
Brussels	1
Canino Grosso	3
De Milan	1
Early Moor Park ...	27
Gros Rouge	5
Hemskerk	17
Kaisha	14
Large Early	25
Moor Park	23
Musch-Musch	1
Oullin's Early Peach .	2
Peach (Gros Pèche)...	9
Roman	1
Royal	4
Royal Orange	1
Shipley's (Blenheim)	5
St. Ambroise	2
Turkey	1

PEARS.

VERY EARLY KINDS.	
Belle de Bruxelles ...	2
Beurré de l'Assomption	1
Beurré Giffard	15
Citron des Carmes ...	14
Clapp's Favourite ...	1
Doyenné d'Eté	20
Jargonelle	220
Rokeby	2
Souvenir du Congres	1
Williams's Bon Chrêtien	75
EARLY KINDS.	
Albertine	17
Autumn Bergamot ...	6
Autumn Nelis	3
Beurré d'Amanlis ...	29
Beurré Goubault ...	12
Beurré Superfin ...	26
Brockworth Park ...	4
Colmar d'Eté	10
Edmunds'	4
Flemish Beauty... ...	3
Gratioli of Jersey ...	15
Madame Treyve ...	4
Peach Pear	4
Summer Beurré d'Aremburg	6
Tyson	2
Yat	2
MEDIUM SEASON.	
Aston Town	2
Baronne de Mello ...	7
Beurré d'Anjou ...	4
Beurré de Capiaumont	8
Beurre Hardy	6
Beurré Bosc	3
Beurré Clairgeau ...	26
Beurré Diel	47
Beurré Berckmans ...	4
Beurré d'Aremberg ...	5
Beurré Brown	9
Beurré Duhaume ...	4
Beurré Sterckmans ...	6
Beurré Millet	4
Beurré Léon Le Clerc.	2
Bishop's Thumb... ...	2
British Queen	15
Chaumontel...	14
Comte de Lamy... ...	1
Dana's Hovey	4
Délices de Jodoigne...	2
Deux Sœurs	2
Doyenné Boussock ...	2
Dr. Trousseau	8
Duchessed'Angoulême	24
Duchesse d'Orleans ...	6
Durandeau	6
Emile dHeyst	3
Eyewood	1
Figue d'Hiver	2
Fondante de Noël ...	1
Forelle	2
Gansel's Bergamot ...	7
Graslin	2
Hacon's Incomparable	5
Hessle	10
Jalousie de Fontenay	1
King Edward's	1
La Sœur Gregoire ...	3
Louise Boune de Jersey	93
Maréchal de la Cour...	21
Marie Louise	113
Marie Louise d'Uccle	25
Marie Louise Nouvelle	4
Messire Jean	2
Napoleon Bonaparte	5
Nouveau Poiteau ...	3
Paradise d'Automne	2
Passe Colmar	11
Pitmaston Duchess d'Angoulême ...	29
Red Doyenné	3
Seckle	5
Sheldon	1
Suffolk Thorn . ..	1
Swan's Egg	3
Thompson's	30
Urbaniste	3
Vineuse	4
Vans Mons	15
White Doyenné... ...	7
LATE KINDS.	
Alexandre Lambré ...	3
Anna Audusson ...	5
Beurré Bachelier ...	8
Beurré Langeliér ...	1
Crassane	3
Commissaire Delmotte	2
Doyenné Defais	2
Doyenné du Comice...	5
Easter Beurré	34
General Todtleben ...	22
Glou Morceaux ...	25
Huyshe's Prince of Wales	8
Huyshe's Victoria ...	1
Inconnue	12
Josephine de Malines	8
Lewis	1
Monarch	20
Nouvelle Fulvie... ...	4
Prince Camille de Rohan	4
Soldat Esperen ...	17
St. Germain	2
Triomphe de Jodoigne	3
Vicar of Winkfield ...	14
Winter Nelis	24
Zepherin Gregoire ...	15
VERY LATE KINDS.	
Anna Nelis	4
Bergamotte Esperen .	27
Bezi Mai	3
Beurré Perran	4
Beurré Rance	39
Colmar Delahaut ...	3
Louise Bonne de Printemps	7
Ne plus Meuris ...	10
Passe Crassane	6
Prince Albert	5
Van de Weyer Bates	3
BAKING OR STEWING.	
Bellissime d'Hiver ...	3
Blk. Pear of Worcester	4
Catillac	7
Lieutenant Poitevin...	3
Uvedale's St. Germain	10

PLUMS.

Angelina Burdett ...	14
Autumn Compôte ...	6
Belgian Purple	5
Belle de Louvain ...	9
Belle de Septembre ...	20
Blue Impératrice ...	8
Brandy Gage	9
Braby's Green Gage...	13
Bryanston GreenGage	19
Cluster Damson... ...	3
Coe's Golden Drop ...	68
Cox's Emperor	32
Corse's Nota Bene ...	4
Coe's Late Red	5
Decaisne	2
Denniston's Superb...	10
De Montfort	2
Diamond	18
Dove Bank	10
Downton Impératrice	9
Drap d'Or	3
Early Favourite ...	5
Early Prolific	54
Early Orleans	13
Fellemberg	7
Gisborne's	4
Golden Gage	14
Goliath	15
Green Gage	83
Guthrie's Aunt Anne	5
Guthrie's Late Green	3
Huling's Superb ...	4
Ickworth Impératrice	10
Imperial Ottoman ...	3
Imperiale de Milan ...	3
Jefferson	70
July Green Gage ...	19
Kirke's	22
Late Orleans	5
Lafayette	1
Lawrence's Gage ...	1
Liegel's Apricot... ...	1
Mamelonne	2
M'Laughlin's Gage ...	4
Miner	1
Mirabelle Petite... ...	2
Michelson's Damson	14
Nectarine	17
Nonsuch	3
Orleans	26
Oullin's Golden Gage	12
Peach Plum...	10
Pond's Seedling ...	13
Pourpart's Plum ...	2
Prince Englebert ...	20
Prince of Wales ...	19
Prune Damson	120
Purple Gage	10
Red Magnum Bonum	16
Reine Claude Bodaert	3
Reine Claude de Bavay	16
Reine Claude Rouge	5
ReineClaude d'Octobre	4
Reine Victoria	1
Royal Hâtive	3
St. Etienne	2
St. Martin's Quetsche	2
Standard of England	4
Transparent Gage ...	15
Victoria...	181
Washington	16
Webster's Gage	1
WhiteMagnumBonum	51
Woolston Black Gage	3
Winesour	3

From the above list, one may get a clear idea as to the relative value at present set upon any hardy fruit in the great Worcester district in which so many of them have been well tried.—*Field.*

THE FORM OF FRUIT TREES.

What is the object of an orchard? It is to raise fruit; and to raise it successfully there must be a wide extent of the tree exposed to sun and air. To do this a high or a low head will do about equally well—perhaps a little better if raised, as it gives more advantage of air and sun, and less moisture. The best form of a tree-top (we have reference here more particularly to Apples) is an elongated one—this in addition to the usual side extent, or otherwise. If the diameter is great it requires wide planting apart, which, though the space may be cultivated for some other crop, were better furnished by the legitimate crop. By lessening the length of the side branches, and directing the growth to the length or upright direction of the tree, more trees may be planted on the same area, and still the same superficies of the tree secured. I have seen some remarkably high trees, branches reaching down to the ground, the trees yielding enormously of good fruit, and yet not overcharged, the branches gently bending with the fruit; being numerous, they could afford to bear a thinly distributed yield, which is always a safe, and may be made a yearly yield.

We want another thing—an undulating instead of an even or roof surface. This indentation of the surface gives more exposed space, which is wanted for the ripening and perfection of the fruit, as well as its growth. To give this increase of surface, it needs but space between the branches, instead of a close, even surface, admitting no sun, and little air. Of course no fruit is raised inside this close surface. The top of such a tree is, as we usually find it, like an inverted cup, and is always a breeder of mischief where the branches reach the ground. Now, there is a certain beauty in a tree with the cone-top set on the ground, the outside being an even, roof-like surface, covered with fruit and leaves—fruit highly coloured and well grown. But it suggests monotony. It also bears less fruit, and of a less excellent quality.

Take now the other top—the same form a little elongated, the branches showing distinctly, giving a diversified surface, which relieves the eye, and adds grace and beauty to the tree. Each branch is a sort of tree in itself, joined to the one stem. Here you have health, perfect ventilation, and access of light; in consequence you have an unmatched quality of fruit, as well as an increase of quantity, and that without straining the tree, the fruit-bearing surface being greater. You have a top here that can probably not be improved. All the excellences unite here. You get, let me repeat, the most fruit from the tree and from the same ground; you get better fruit; you strain the tree less in its production, and you have a healthier growth, both of wood and fruit.

Shall there be a high or a low head? This is a mere matter of taste or option with the owner, influenced somewhat by circumstances. If it becomes necessary to cultivate the ground, a very low head will be in the way. In a moist season a low, close top will certainly work mischief; Moss and mildew will appear; fruit will be rusty. It will be less so where elevated and exposed to the air. A high head requires a long ladder to secure the fruit. It also exposes more surface to the wind; but in an orchard, where the trees, as in the forest, protect each other, this somewhat loses its force. Let the branches be distinct, with spaces between for sun and air. Our best trees have touched the ground, here and there a branch, when heavy laden; and with a diversified surface extending far up there was as fine a sight as could be wished for—gracefulness, variety, and a wealth of rich, highly-coloured fruit. There are several advantages in the elongated top that cannot be overlooked. There is the space above, which is unlimited; all the growth which the roots will allow may here find room. No lack of space, as with the side growth so often.

Cultivator.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Vines in Pots.—I have 60 Vines in pots, covering the roof of an early house with the finest foliage, showing, after having been disbudded, from 25 to 30 bunches, just expanding their flowers. Is not this much better than thus early disturbing permanent Vines?—R. Gilbert.

Prizes for Fruit.—The prizes offered by Messrs. Veitch & Son for fruit are worthy of all praise. I hope and believe they will receive a hearty response. With respect to the prizes for Pines, I would suggest that such varieties as Black Jamaica and Ripley Queen should take the place of Providence and Charlotte Rothschild, which are large but coarse, and of very indifferent flavour; in fact only sorts for "show," and not worth growing. R. Gilbert, *Burghley, Stamford.*

How to make Vines break their lower buds.—Early forced Vines, especially pot Vines, are generally disposed to break their top buds, or the latest formed ones, first. A sharp bend, by tightening the tissues and arresting the ascent of the sap, will cause the lower buds to break—at least those immediately below the bend: but twisting the cane regularly its whole length checks the rush of sap through the tissues more effectually, and causes all the buds to break. Another good plan is to keep the bottom part of the cane near the pipes and the top away from them and comparatively cool. I have often adopted this plan with long vine rods of one year's growth, and have always found it to be suceessful.—J. S.

THE ARBORETUM.

FREMONTIA CALIFORNICA.

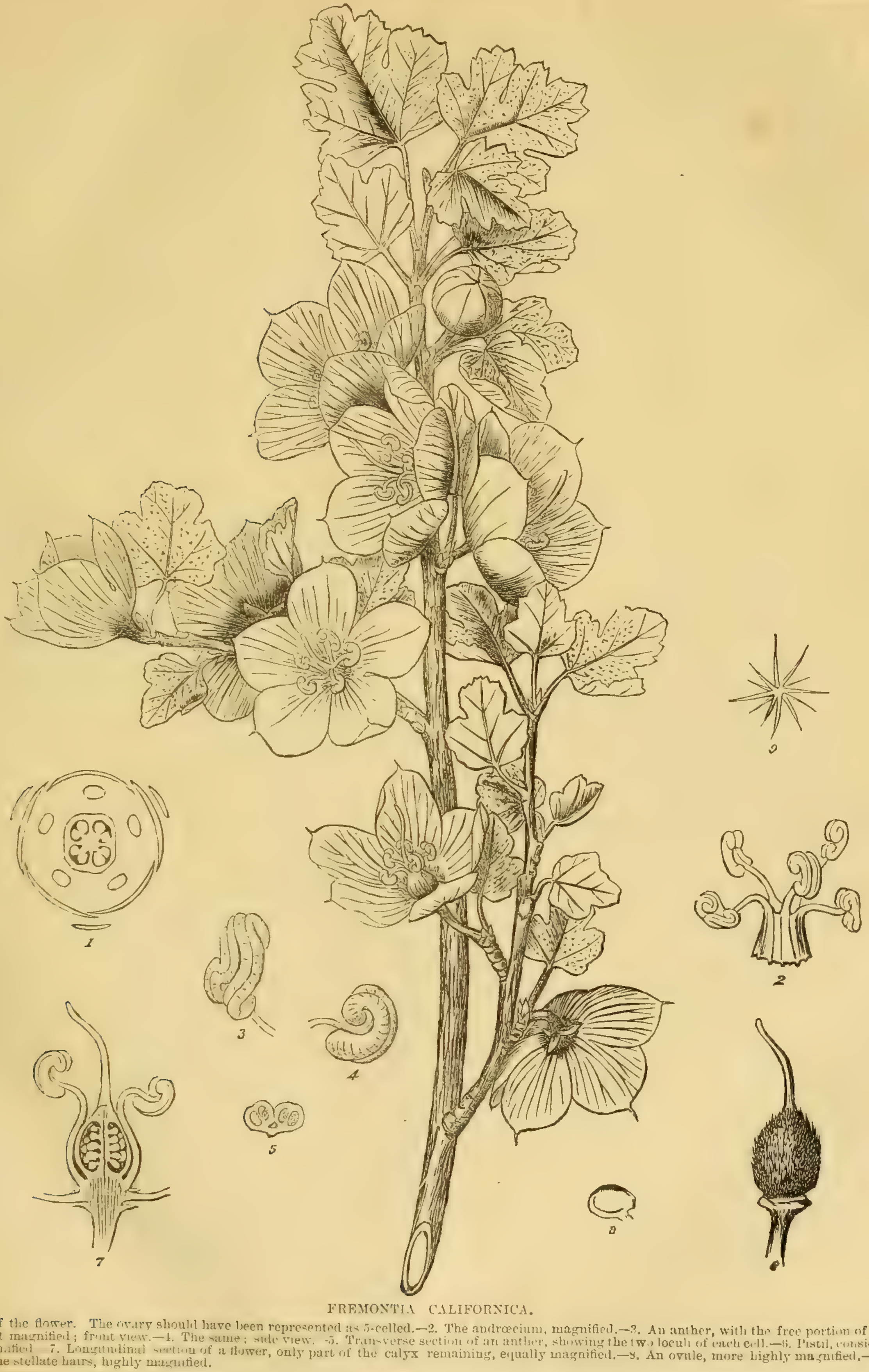
Amongst comparatively recent introductions to our outdoor gardens, few are more ornamental than Fremontia californica, a fine shrub, named after Colonel Fremont, who discovered it in the northern part of the Sierra Nevada, during one of his Californian expeditions. In its native habitats it seldom reaches more than 10 feet high, and has considerable resemblance to a Fig tree in the construction of its leaves. They are, however, less robust, of a bright shining green colour above, and tomentose underneath, three, five, or seven lobed, the lobes collectively forming a roundish outline. They are about 3 inches in diameter, and are supported on petioles of about the same length. The accompanying illustration, taken from a mere twig, gives but a faint idea of the beauty of this shrub or of the size of its leaves. The flowers are bright yellow and are produced singly at the extremities of short spur-like branches; they consist of a widely campanulated calyx, immediately under which are three small lanceolate bracts. One of the finest specimens of this plant in Britain is in the nurseries at Coombe Wood. It was raised from seeds sent home to Messrs. Veitch from California by Mr. W. Lobb. It is planted against the wall of one of the glass houses, where it has remained uninjured for several years, and produces annually in May and June a profusion of golden blooms. It seeds freely, but in this country the seeds have not as yet ripened. It likes a well drained good loamy soil, not too retentive, stagnant water in winter being its worst enemy.

Besides being treated as a wall plant, it is likewise grown in the form of isolated bushes in the same nurseries, protected in winter with a hoop and mats. It is evident, however, that a south wall in a well sheltered position is its most suitable English home. Where the severity of climate would kill it in winter it might be kept indoors, and planted out in April or May, or it might with advantage be grown permanently in a cool conservatory.

Wm. Falconer.

CONIFERS AT CASTLE KENNEDY.

For fully twenty-four hours I had been travelling north-north west, and found at the end of my journey avenues of Araucaria imbricata nearly half-a-mile in length, averaging about 30 feet high, of Picea nobilis avenues longer still, and of nearly the same height. Many of the Piceas were heavily laden with cones full of prime seed. Avenues of Pinus insignis, as green as grass, and from 30 to 40 feet high; and others of Picea Pinsapo, P. cephalonica, P. Nordmanniana, P. Webbiana, P. lasiocarpa, &c.; Pinus laricio, P. austriaca, P. excelsa, Abies orientalis, A. Albertiana, and A. Morinda, Cupressus macrocarpa, C. Lambertiana, C. Lawsoniana, Thuja Lobbii, Cryptomeria japonica, Taxodium sempervirens, Cedrus Deodara, C. Libani, and many others; while the avenues were backed in many instances with such masses of Arbutus, Laurustinus, Sweet Bays, variegated Hollies, Laurels, Rhododendrons, and Fuchsias as one hardly expects to find unless in the south of England or Ireland. Many of the Sikkim Rhododendrons are quite hardy at Castle Kennedy. The Hydrangea forms bushes in the open air, as in Devonshire; while one of the Eucalyptuses from Australia has stood in the open air for several winters. The whole place forms a sort of peninsula between two lochs of great extent; and to this and its proximity to the sea the comparative mildness of the climate is no doubt due. This mode of planting in avenues is also somewhat favourable for shelter. The lines run in various directions, thick blocks of common trees or choice shrubs are packed in as buffers between the avenues, and break the force of the wind. These buffers are indeed much needed, for the winds are terrific, sometimes breaking trees right off, and at others tearing them out by the roots. Other trees, such as the Wellingtonia gigantea, Taxodium sempervirens, and even the Cedrus Deodara, make little progress, unless in the most sheltered positions; whereas the Araucaria, Picea nobilis, P. Pinsapo, Pinus excelsa, P. laricio, P. austriaca, Cupressus Lambertiana and macrocarpa, and even the Arbutus, Sweet Bays, and Laurustinuses, seem to brave and defy the wind at its worst. Again, such Pines as P. Benthami, P. Coulteri, and even Picea Webbiana, seem to shrink from the wind and grow slowly. The following are among the more notable and freest-growing species and varieties at Castle Kennedy: Pinus muricata, P. Hartwegii, P. resinosa, P. insignis, P. laricio, P. austriaca (these three last are the freest of all); P. tuberculata, P. rigida, P. pyrenaica, P. patula, P. Edgariana; Cupressus, the two already named, and



FREMONTIA CALIFORNICA.

1. Plan of the flower. The ovary should have been represented as 5-celled.—2. The andrœcium, magnified.—3. An anther, with the free portion of its filament magnified; front view.—4. The same; side view.—5. Transverse section of an anther, showing the two loculi of each cell.—6. Pistil, considerably magnified.—7. Longitudinal section of a flower, only part of the calyx remaining, equally magnified.—8. An ovule, more highly magnified.—9. One of the stellate hairs, highly magnified.

Lawsoniana in many varieties, C. thurifera, C. torulosa, C. M'Nabiana, and others. Most of the Junipers thrive well, as also Cryptomeria japonica, C. elegans, and C. araucarioides. Thuja gigantea is a fast-growing tree, and all its varieties do well. The progress made by all the trees is astonishing when we look at the bleak and exposed position, and reflect that the largest of these Conifers were not planted till 1847, and most of them at periods long subsequent. The charming Retinospora and other novelties from Japan are now being planted. If a tree or shrub does well, it is multiplied as fast as possible, and grouped, dotted, and planted in avenues by the hundred or thousand. If it merely consents to live, it is preserved as an object of interest, but not greatly multiplied. In this very valuable information is collected, and trees most suitable for given purposes and localities discovered. Picea nobilis, Pinus austriaca, Pinus laricio, Cupressus Lawsoniana, and others, are looked upon as valuable timber trees. They far outstrip the common Spruce, Larch, or Scotch Fir on their own ground. But this rapid growth is not favourable for timber. Quick grown Cedars of Lebanon make softer deal than slower grown Scotch Fir. Still it is a great thing in a landscape to see the trees of other lands grow so freely, and intermingle the tints of their foliage and their endless variety of form with the trees of our native country, as they do in the well-planted and well-kept grounds at Castle Kennedy. F.

ROAD-SIDE TREES AND TELEGRAPH WIRES.

LET me advise your correspondents who have suffered from the mutilation of their trees to appeal to the law for protection. In the case of a parish road, I feel no doubt the proprietor of the adjoining land can compel the removal of telegraph posts if injurious to him, as he still retains the freehold of the land, and the public rights are limited to the use of it for the purposes of a road. Under any circumstances, an action would no doubt lie against the Post Office for damage to the trees, and probably the man who cut them would be liable to summary proceedings before a magistrate under the "Wilful Damage Act." A COUNTY MAGISTRATE.

SCOTT AS A LANDSCAPE-GARDENER.

SIR WALTER, writing from Edinburgh to William Laidlaw, his friend and agent at Abbotsford, says—"You must get some one to stick in a few wild Roses, Honeysuckles, and Sweet Briars, in suitable places, so as to produce the luxuriance we see in the woods which Nature herself plants. We injure the effect of our planting, so far as beauty is concerned, by neglecting underwood . . . I want to know how you are forming your glades of hard wood. Try to make them come handsomely in contact with each other, which you can only do by looking at a distance on the spot, then, shutting your eyes as you have done when a child looking at the fire, form an idea of the same landscape with glades of woodland crossing it. Dismiss your ideas about expense. If I were to buy a picture worth £500 nobody would wonder much. Now, if I choose to lay out £100 or £200 to make a landscape of my estate hereafter, and add so much more to its value, I certainly don't do a more foolish thing. I mention this that you may not feel limited so much as you might in other cases, by the exact attention to pounds, shillings, and pence; but consider the whole on a liberal scale. We are apt to consider plantations as a subject of the closest economy, whereas beauty and taste have even a marketable value after the effects come to be visible. Don't dot the plantations with small patches of hard wood, and always consider the ultimate effect."

It is pleasant to see from the Laidlaw manuscripts how the friends of the poet came forward with kindly contributions; the Duke of Buccleuch sent bushels of Acorns, the Earl of Fife presented seed of Norway Pines, Lord Montagu forwarded a box of Acorns and a packet of Lime seed. One arboriculturist sent seeds of the Corsican Pine, then got with difficulty, and also two or three of a species which grew to a great height on the Apennines. Dr. Graham reported that they should be raised in finely prepared mould under glass, but without heat. A box of fine Chestnuts came from Lisbon; the box was, however, sent on from Edinburgh to Abbotsford unopened, and before Laidlaw heard of them the Chestnuts were peeled, and of course rendered useless for planting. One object was to form an impenetrable copse or natural hedge, or verdurous screen, all epithets used by the poet (Milton has "verdurous wall"), and for this purpose there were sent from Edinburgh 3,000 Laburnums, 2,000 Sweet Briars, 3,000 Scotch Elms, 3,000 Horse Chestnuts, loads of Hollies, Poplars for the marshy ground, and Filberts for the glens. The graceful Birch tree, "the lady of the wood," was not neglected. "I am so fond of the Birch," writes the poet, "and it makes such a beautiful and characteristic underwood that I think we can hardly have too many. Besides we may plant Birches as hedges." He therefore purchased at this time about 100,000 Birches.

"There are many little matters relating to the walks," writes the busy and happy laird, "which, though some contemn them, are not less necessary towards comfort; a seat or two, for example, and covering over drains. In front of the old Rispylaw is an old quarry, which, a little made up and accommodated with stone seats and some earth to grow a few Honeysuckles and Sweet Briars, would make a very sweet place." In another letter to Laidlaw, he says:—"I have got a new light on Larch planting from the Duke of Athole's operations. He never plants closer than 8 feet, and says they answer admirably. If this be so, it will be easy to plant our hill-ground. Mr. Morritt, of Rokeby, writing to the Hon. Mrs. Stewart Mackenzie, says:—"He (Scott) tells me that he never was so happy in his life as in having a place of his own to create. In this Caledonian Eden, he labours all day with his own hands."

But a small number of the visitors that throng annually to Abbotsford ever think that the woods and wilds around it owe their origin to the creative genius of Scott. These extracts may, therefore, tend to throw some light upon the matter. The interest belonging to every tree and shrub around that romantic building will be greatly enhanced by the knowledge that it has been planted and reared under the direction of the great romance builder himself. As we note the different kinds of Ivy creeping up the gray walls of the mansion, we feel almost sure that they have been planted there by Scott's own hand; perhaps sent to him by friends who knew how acceptable plants of rare and variegated Ivies would be to the man whose soul was in such intimate unison with nature. All who visit Abbotsford may see at a glance the natural difficulties under which Scott laboured to make his place either beautiful or romantic. True he had the Tweed as a groundwork for his great natural picture, but he was on the wrong side of the river, and a high road ran very near the mansion. Still the planting and treatment of the grounds about Abbotsford are better worth inspection than even the chair where sat the man who could paint and pourtray nature so well in all her varied aspects, and on which visitors yet gaze in silent wonder. J. T.

American Black Walnut.—A correspondent of the *Builder* directs the attention of architects and cabinet makers to the value and beauty of black American Walnut wood. "My attention," he writes, "was first directed to its use by an accident; and during now a period of seventeen years I have tested its durability and adaptability for almost every kind of woodwork. I have had it used for the largest and most costly kinds of furniture, with carvings of the most elaborate kind. I have had it used for doors exposed to the full action of the weather; for conservatory doors, exposed to constant damp and considerable changes of temperature; for a large and costly staircase, the whole of the walls being covered with the same wood, and the floors of the same; for internal doors and casement windows, of rather large and costly construction, and carved, and for every kind of small cabinet work, exhibiting the highest taste and good workmanship; and for all these purposes I have found the wood answer most admirably. It appears to bear rough external wear quite as well as Oak. It does not warp or crack like Oak, and bears the greatest transition of heat and cold without any visible change. The colour of the wood, when oiled, is perfect—that natural rich brown colour which three centuries of wear will alone give to Oak; it has a close grain, without much figure; it is thoroughly well adapted for every kind of carving; and its cost now is not higher than Oak. It is to me surprising that for every species of good church-work it is not used. It has every possible advantage over Oak, and in old cathedrals requiring new stall-work its rich brown colour would give it a great advantage over the pale brown yellowish hue of new Oak—which, to my own taste, is most offensive. After great experience, I know not one drawback to the use of black American Walnut; and want of knowledge of its many excellent qualities has, I am sure, alone prevented its more general use."

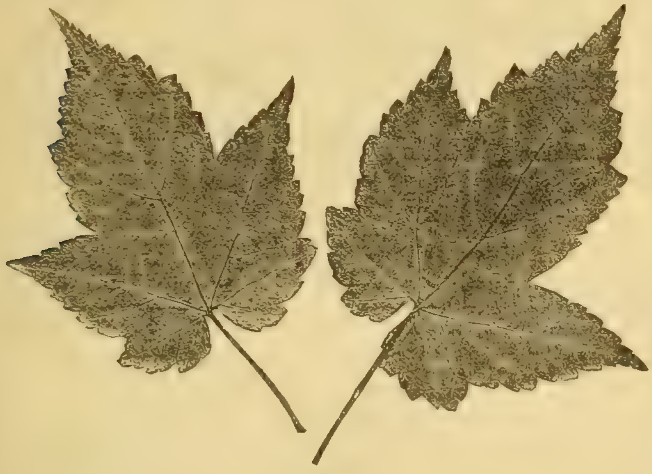
Neglecting Young Trees.—I have lately been looking over some old bills which I have had from various nurserymen, and am astonished to find the quantities of Pines and other specimen trees which I have had from them during these last dozen years; and where are they now? Some few have been destroyed by ground game; but the main quantity, having been guarded, where lost have been choked by the Grass and Brambles. You come upon a suitable place for a specimen, and get a Pine or a Wellingtonia, as the case may be, out of your little nursery, which no estate should be without, and think to yourself, "Now I'll look after this tree and see that it gets fair play." A couple of years pass, and accidentally you tread the same path. Your memory is jogged by seeing either a brown, dead stem, or a poor creature struggling for its life in the midst of a mass of Brambles, growing all the more luxuriantly for the stirring of the ground. I intend in future to keep a book, enter all specimen trees in it, marked when and where planted, and have them looked to twice in a summer. Of course in a large place your forester should look to these things; but, after all, I doubt if he does, and the waste of trees and time goes on. I find Picea grandis, P. nobilis, and P. Nordmanniana do better with me on the Yorkshire hills than anywhere. Curiously enough, I have great difficulty in getting the common Silver Fir, Picea pectinata, over the first few years, owing to spring frosts cutting down the leader. If once established, they do well.—*A Soldier.*

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE MOUNTAIN MAPLE (ACER SPICATUM.)

This forms a neat, small, deciduous tree, from 15 to 25 feet high, with rather an open and somewhat spreading head, furnished with slender brown shoots, and in the autumn, when garnished with its numerous small keys, with thin membranous wings beautifully tinged with red, and fixed upon slender pendulous spikes, it forms a very ornamental object. It is a native of North America, on the mountains from Canada to Georgia, and was first introduced in 1750. The leaves are rather below the middle size, and three or slightly five-lobed, with the three outer ones acutely pointed and the largest. They are irregularly and coarsely serrated on the edges, cordate at the base, and, when full grown, deep green and smooth on the upper surface, downy and pallid beneath, and on long, slender, bright red footstalks, and, just before they fall off in the autumn, turn to a yellowish-red colour. The flowers are small, greenish-yellow, and produced in great abundance in many-flowered, erect racemes in May. The fruit or keys are small, quite smooth, and produced in pendulous racemes, and when nearly ripe, tinged with red; the carpels are thick, and the wings rounded at the ends, and somewhat spreading. The synonyms are Acer montanum, parviflorum, and sometimes Pennsylvanicum. Length of full-sized leaf, 6 inches, including the footstalk, which is 2½ inches, and the breadth 4 inches.



A. spicatum.

Key of A. spicatum.

Briar-wood Pipes.—The well-known wooden pipes, used by smokers, are made from the root of a plant called the Briar-Ivy, which is a species of Smilax, found growing throughout the Southern States of America. The best qualities grow in Virginia. It comes to market in pieces the size of a small keg, and is worth £10 per ton.

BLUE COLOUR OF THE LAKE OF GENEVA.

M. Collas (see p. 558, Vol. II.) attributes the blue colour of the lake of Geneva and of other waters to the quantity of silex held in solution, which is brought down by the tributary streams from the strata through which they pass. He is stated to believe, also, that the blue colour of all the water of the globe is due to the same cause, statements from which I beg to dissent.

In the first place, as to silex or flint, one may naturally surmise that the blue water of the Lake of Geneva and of the Rhone as it leaves the lake are far less charged with that substance than the Rhone when it enters it at Villeneuve, loaded with the detritus of the glacier's stony bed, and yet, there, it has no symptom of blue. Then as regards glass; although the quantity of silex in crown glass, flint glass, crystal, and strass varies a good deal, yet those sorts that contain the most silex have not a bluer tint on that account; in fact, their colour is only materially affected by the amount of iron or of manganese that is put into them. A common-place view of the subject would be this:—Air, as well as the waters of the lake of Geneva, of the Mediterranean, of the deep sea in the ocean commonly called "blue water," of the Rhone, the Moselle, and other rivers; the deep ice in the Swiss glaciers, and icebergs at the Poles, are all perfectly transparent mediums; and taken in small portions, such as a glass of any of these waters, a lump of any of these ices, or a few square inches deep of air, are, to all intents and purposes, perfectly colourless, and in no way affect the appearance or colour of any illuminated body seen through them. But if the depth of the column of these mediums be greatly increased, accordingly as it augments, will the object seen through them put on more and more of a bluish tint—be it a pebble at the bottom of the Rhône, a stone imbedded in clear, thick ice, or a mountain far away on the horizon; the appearance in the latter case being designated by painters as "aërial perspective." If the column be continued deeper still, objects at last become invisible, and the blue tint covers all. What, then, is the cause of this blue, if we will not allow, as Messrs. Collas & Lallemand do, that it is owing either to silex or to the absorption of certain particular rays? Without going into any very erudite technicalities, we would say that the colour is owing to a black, *i. e.*, an unlighted background seen through an illuminated transparent medium; for all these mediums are not only transparent, but their component particles reflect light. We will not here inquire whether chemically dried air reflects light or not, and whether air, even in the driest countries, only reflects light because of the water it contains. Suffice it that everywhere in nature it does so, and that for that very reason, and because the particles of ice, water, and air, break up and reflect the rays of light in all directions, those rays can only penetrate them to a certain depth, then comes a point they fail to reach, and that this limit is of course dark, in other words "black," be it the "outer darkness" beyond our atmosphere looking up, or certain strata deep in the sea or the river, looking down. And it is this black seen through the illuminated mediums, or what natural philosophers call diffused light, which conveys the sense of blue to the eye. When the sun goes down this blue becomes deeper and the blue vault would become an "inky one," but for the moon and stars that still light up the medium a little; the transparency is still there, and through it we perceive the black background growing nearer and nearer, according as the rays of light penetrate less and less deep into the atmosphere, and finally vanish with the orb that emits them. If we go out on a dark night with a lantern, the black background encircles us within a few feet, and whether an inch beyond that circle there exists a white wall, or a red curtain, or 100,000 miles of space, it is all one to us. The very forcible epithet of "tangible darkness," according to our notions, appears a very true one, as applied to a very dark night. The black vault of "outer darkness" has come down to our brow, and the black bottom of the ocean has risen to our feet, and whatever we put our hand upon is black, and we are bathed in it; it hems us in on all sides. Morning sends all this black wall back again down far below the surface of the sea, upwards far above all earthly ken, away around us further than human eye can reach. It is still there but toned down into that lovely hue which we so much admire in the sky, the water, and the glacier. And where ice and air and water have not this lovely hue it is that they are not transparent and limpid, and either soiled by extraneous matter or actually coloured by some vegetable or mineral pigment, or reflect the hues of seaweed-covered rocks, as in many an emerald green estuary on the western coast; or in the case of the atmosphere, are so filled with vapour that they shut out the background completely. Fredk. Palmer.

Versailles.

FLOWERS FOR HOSPITALS.

We are leaving home, a country home, and going through London. We have heard that in hot July weather, home-sick folk in London hospitals hanker after flowers from the country, yearn after Thyme and Lavender, and Wallflowers, and Balm of Gilead. We have got some of these, we will pick them as it is a fine morning: and our Roses will only fade unseen, so we may as well pick them. We will have them put in a hamper, and take them vaguely up to London. When we arrive at King's Cross, we ask what hospitals we pass between that and Paddington? "Hospitals?" says the porter astonished, surveying us to see whose fate it is to be left stranded at "any hospital" between this and Paddington. "There are no hospitals," he replies.

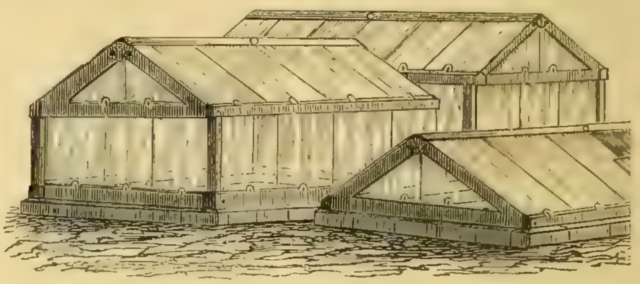
There is no time to be lost, so we sigh, give our hamper a push back on the sloping cab-seat and drive on. But we are bent on doing good now that we have had all the trouble of picking the flowers; besides, we want to get rid of the hamper, which slips irritatingly forwards, and is as often pushed back to its place. So we keep a sharp look-out. Very soon in Marylebone Road we come upon some objects of our search. When we have passed one or two large buildings, "supported by voluntary contributions," we begin to be fastidious. We will not give promiscuously to any charity, but will find one we fancy. And we fix upon the Cripples' Home. Shall we get out, or shall we leave the hamper? We will get out, and just see how the experiment answers. The lady superintendent is smiling at the door; we show her the flowers, and she smiles still more. We carry the hamper up to a large room, where about twenty poor cripples are working. We empty the hamper on to the table, and a great cry of "Oh!" prolonged almost into a sigh, is our thanks and greeting, while all the dull faces brighten at the sight of flowers that carry them back to home. May the superintendent ask our name? "Country friends," we say, and hurry off; we are still rather ashamed of doing good. We have enjoyed seeing those faces, and by getting out we have been able to bring away the empty hamper; and then a "happy thought" strikes us—we may do it again. We are quite sure it is a good thing to give away flowers to the poor: we could not allow them to come into our garden, oh, no! but cutting the flowers and giving them away (when we are leaving home and cannot enjoy them—especially) is another thing. We wonder whether the poor people would like a plant—a little country plant, that would get dusted over with London dust, and be watered every day, and kept in a dark corner? Perhaps, when we have got a step farther, we may not think it too much trouble or too much loss to send plants to the Cripples' Home or the Children's Hospital —pots included.

Vegetation at Bethlehem.—Cornfields and vineyards creep along the ancient terraces. In the spring the hills and valleys are covered with thin grass, and the aromatic shrubs which clothe more or less almost the whole of Syria and Arabia. But they also glow with what is peculiar to Palestine, a profusion of wild flowers, Daisies, and a white flower called the Star of Bethlehem, with a blaze of wild flowers of all kinds, chiefly Anemones, wild Tulips, and Poppies. Of all the ordinary aspects of the country, this blaze of scarlet colour is, perhaps, the most peculiar, and to those who first enter the Holy Land, no wonder it has suggested the tempting and significant name of "the Saviour's blood-drops." * * * The "hill country," as it is called, of "Juda," in earlier, or "Judea" in later times, is the part of Palestine which best exemplifies its characteristic scenery. The rounded hills and broad valleys, the scanty vegetation, the villages and fortresses—sometimes standing, more frequently in ruins—on the hill tops, the wells in every valley, the vestiges of terraces, whether for corn or wine. * * * Here, more than elsewhere, are to be seen on the sides of the hills the vineyards marked by their watch-towers and walls, seated on their ancient terraces, the earliest and latest symbol of Judah. The elevation of the hills and table lands of Judah is the true climate of the Vine.—*Stanley.*

GARDEN STRUCTURES.

HORLEY'S PATENT GARDEN FRAMES.

Specimens of these were exhibited at Birmingham in June last by Mr. Horley, of Toddington, Beds. They are made of wood, glazed with 21 oz. glass, and put together with iron screw pins, in the manner of a bedstead, a wrench being supplied for that purpose. They are made in lengths 4 feet wide, so that any number may be placed together. The principal novelty in the construction of these frames is the method of fixing the glass, neither sash-bar nor putty being used; the squares, which are 24 inches by 16, are run into a groove at the top, and rest in a rabbet at the bottom, each pane being secured in its place by an iron button. To facilitate the removal of all or any of the squares, they are not allowed to lap, and a piece of webbing is fixed underneath each, by which they are easily raised. The examples which we saw at Birmingham were light and neat, and looked as if they would prove both useful and serviceable, a result which we learn has been fully realised. They are well adapted for raising choice seeds or for striking cuttings, and they are so cheap that 32 square feet of ground can be covered by them for a sovereign.



Horley's Garden Frames.

FRUIT TREE PROTECTORS.

Your correspondent, who signs himself "An Architect," has, I feel persuaded, merely taken a hurried glance at the illustration given at p. 474 of your last year's volume, without reading the letterpress. If he will procure my "descriptive catalogue" he will find that I have proposed the very thing which he recommends. I never intended that the trellis-work should be kept open winter and summer; such an idea would be absurd. He will find that "the sides and ends can be glazed within 2 and 3 feet of the ground, and that that space can be filled in with close woollen matting from Christmas to Midsummer." These houses are not intended to take the place of conservatories or plant-houses; they are simply "Fruit Tree Protectors," that can be put up by any country gentleman at small expense. I shall be willing to put this to a practical test at Chiswick or elsewhere, if "An Architect" is ready to share a portion of the expense. Models of my contrivances were shown last summer at the great Exhibitions at Birmingham, Cardiff, Dorchester, and Kelso, and they were considered by "one and all" to be valuable auxiliaries in the way of protection. Sir W. Forbes, Fintray House, Aberdeen, says in the *Aberdeen Journal*:—"With reference to the Peaches which gained the first prize at the horticultural show the other day, I may mention that they were simply protected by Rendle's Patent Wall Screen, and had no artificial heating whatever." W. E. Rendle.

RUSTIC ARCHITECTURE.

Your correspondent, "An Architect," is right about draughts (see p. 474, Vol. II.), and I marvel that he is so, for most architects are all at sea on this point, planning and building so that there is a draught in every portion of the room except up the chimney. But plants do not like being set in a draught, and I proposed, I think, that they should not be so in cold weather. When warm, even draughts may prove useful; for, singular as it may seem to "An Architect," rustic orchard houses may be turned to other and equally useful purposes besides that of forcing fruits, that is, they may be used to retard them. Peaches, Plums, and Nectarines may be more useful in the latter end of September and all through October than in July. The draught will enable us to keep these late. There is, therefore, no doubt that these houses will prove serviceable. One or both sides may be glazed or curtained up at pleasure, thus placing draughts under control. There is, therefore, no need for a drifting sleet or snow-storm being allowed to drive in among the trees.

The great merit of all such temporary erections is that they afford shelter without disturbing the light, and I do hope that the rage for and popularity of cheap glass structures, such as those offered by Mr. Rendle, will induce horticultural architects in future to make it the first condition in all their works to provide a maximum amount of shelter with a minimum of shadow. If they will do that we will gladly welcome their taste and genius in helping us to make our light and efficient cultural contrivances more beautiful; for there is no doubt that cultural capacity, if I may so express it, ought to be compatable with structural elegance. I would invite architects to render us this service as some atonement for the past injuries their so-called plant houses used at one time, and still do even now sometimes, inflict on horticulture; for there is no doubt that our rage for light and craze for cheapness is leading us to overlook those characteristics that ought more or less to distinguish all permanent horticultural buildings, viz., stability, beauty of design, and perfection of execution and finish. D. T. Fish.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—The unusual mildness of the season has brought out blossoms of Snowdrops, Violets, Daisies, occasional Narcissi, Pansies, a few Wallflowers, golden-leaved Feverfew, Christmas Roses, Primulas, both yellow and crimson, China and tea-scented Roses, Jasminum nudiflorum, Chimonanthus fragrans, Laurustinus, Arbutus, and others. It is only on the Jasmine, Hellebores, Snowdrops, and Violets, however, that flowers are really plentiful. If bulbous plants are so forward as to be likely to be injured by frost, should it come, top-dress the beds with leaves, ashes, or similar materials, among which cocoa-nut fibre is the neatest and best. Transplant trees and shrubs, repair and make walks, construct, reduce, or otherwise renovate rockeries, relay turf, and energetically proceed with all similar alterations. Sow Sweet Peas, and protect them at the same time from pheasants. Remove dead wood from climbers on walls and on pillars, and tie up healthy shoots. In wet weather prepare stakes for Sweet Peas, Dahlias, standard Roses, and similar plants. Examine Dahlia, Canna, and other roots, removing from them all decaying portions, and keeping the sound roots dry and cool.

Conservatories.—Arrange foliage and flowering plants together effectively and harmoniously. Remove plants done flowering, and introduce a fresh supply from the forcing pit. Give a little weak manure water to Cyclamens. Keep late ones close to the glass in frames free from drip, and sow some seeds of Cyclamens in an intermediate house. Sow also a few seeds of East Lothian Stock; keep autumn potted Stocks in cold frames, and pot off a few of them singly. Pot any Calceolarias or Cinerarias that may require it, using a rich compost for them. Prune a few more pot Roses, and place them in a forcing house or early Peach house to induce them to come into bloom. In early Fig houses or other fruit houses not too much shaded many flowering plants may be brought into bloom, either for conservatory decoration or for cut flowers. Rhododendrons, Roses, Callas, Tree Carnations, Heliotropes, Mignonette, Lily of the Valley, Tulips, Hyacinths, Narcissi, Kalmias, Jasmines, Weigelas, Prunus sinensis, Lilacs, Ghent and Indian Azaleas, Camellias, Fuchsias, Hippeastrums, Hæmanthuses, Violets, Pelargoniums, and several other plants might be flowered in early fruit houses, in which they should be arranged with discretion. Such as are soft-wooded should be kept as near the glass as possible, and hard-wooded deciduous plants should be placed by themselves so that they can be freely syringed. Violets, if planted out in frames on a bottom heat, afford more flowers than under any other circumstances. Proceed with the staking and tying of specimen hard-wooded plants, such as Boronias, Croweas, &c. Keep Heaths in the freest ventilated portion of conservatories, water them moderately. Remove plants of Solanum Capsicastrum when the berries begin to drop or shrivel, and save a few of the best for seed. Remove all damping or decaying leaves, and use every means at command for keeping down insects.

Bedding Plants.—Frames heated with hot-water pipes have been found unusually serviceable for these this season. The finer sorts of tricolor, bicolor, and other Pelargoniums of that description should be placed at once in an increased temperature, if not already done, in order to induce them to furnish cuttings. If these are struck early, good plants may be obtained before May. Strike also some Lobelia and Gazania cuttings. Sow some Lobelia seeds in a hot-bed or warm pit. Start into growth Verbenas, Coleuses, Iresines, Alternantheras, Lantanas, Cupheas, Abutilons, Solanums, such as marginatum and robustum, Ferdinandas, Melianthuses, Wigandias, &c., for cuttings. Loosen the surface soil amongst Calceolarias, Pyrethrums, Phloxes, Pansies, &c., planted out in frames, and scatter some dry wood ashes amongst them.

Hot-beds.—Prepare materials at once for the construction of these. One made immediately of equal parts of stable litter and leaves will be found useful for starting a few early Gloxinias, Caladiums, Achimenes, and roots of Lilium auratum; also for cuttings of different kinds; and it will afterwards be useful for the raising of various kinds of seeds. Throw into a heap a mixture of two or three parts of leaves and one of litter, for another bed in February. Besides hot-beds necessary for bringing plants into flower, several are required for vegetable forcing, especially where there are few hot-water heated structures. In April and the two following months these beds will be useful for soft-wooded greenhouse plants, such as Balsams, Cockscombs, some annuals, and various odds and ends. In others, Cucumbers, Chilies, &c., may be grown; and those not required can be removed and used for manure, or turned for forming a compost for the potting bench.

Indoor Fruit and Forcing Department.—If the weather be fine, push down the lights of Pine pits about a fourth of an inch for two or three hours at midday. Cover frames containing Pines with mats at night. To such as are planted out in frames give no water if the heat is kept up by means of fermenting material. Watch carefully fire-heated pits or houses. For Vines coming into flower, maintain a night temperature of 65° Admit a little fresh air as long throughout the day as is practicable when the blossoms have expanded, keeping up the temperature by means of fire-heat at the same time. If the air comes heated into the house by being made to travel along or over hot-water pipes, so much the better. Syringe Vines breaking into leaf, and if possible maintain the desired amount of heat by fermenting material. Remove loose bark from late Vine rods, and wash and paint them with some insect-destroying mixture. Syringe daily Peach trees whose fruit has set. Ventilate a little day and night houses in which plants are in flower, and give fire-heat at the same time. Prune the latest trees, and shut up another house for succession. If French Beans are not already in Vineries or pits, place them along the narrow front shelf in Pineries. Place a few sprays of birch twigs in each pot, and run a cord along next the path, so as to prevent the twigs or plants coming in contact with the clothes of the workmen. Syringe them frequently and water them abundantly. Sow Mustard and Cress in boxes according to demand, and keep the boxes in early Vineries or Peach houses. Introduce also some roots of Mint and Tarragon. Keep up a succession of Rhubarb, Seakale, Endive, Chicory, and Dandelion, in the Mushroom house, or in any other place where a temperature of 55° can be maintained. If Seakale be forced too slowly it becomes stringy. Asparagus is best forced in hot-beds. If a large quantity of roots has been lifted at once, lay them in a heap but not so thickly as to cause fermentation, and cover them over with a mat. It is better, however, to lay them into the soil quite thickly, and to lift as required. Construct hot-beds for Potatoes. Start the tubers in some of the forcing houses, and after they have pushed into growth an inch or two in length, plant them out in the frames. Sow some Radish seed over the soil, the young Radishes from which will be ready for use before they become an obstruction to the Potato crop. Prepare hot-beds consisting of two parts of leaves, and one of litter for Turnips, Cauliflowers, Lettuces, Celery, Onions, &c. Brisk hot-beds are also necessary for Tomatoes, Melons, Cucumbers, &c.

Fruit and Kitchen Garden Department.—Uncertain weather makes uncertain work. Sometimes a day unseasonably fine is preceded and succeeded by deluges of rain, rendering it difficult to determine what to do first, or what can be done. In the mornings, if dry, wheel manure on to empty quarters. Trench or dig in the early part of the day, and when warm, nailing, pruning, and similar work should be proceeded with. In dry weather sow some white silver-skinned Onions on a warm border. Sow also a small bed of Radishes, covering with litter, and protecting the seed, after it begins to grow, from birds, with netting. After drawing earth to early Peas, sow some Round Spinach between the rows. Sow some early Dutch Turnip seed on a warm border, and treat it like Radish. Plant pretty deeply some early Potatoes in a warm border, the soil of which is dry and light. Plant, likewise, some tubers of Jerusalem Artichokes in any out-of-the-way corner. Sow some seeds of Vanack Cabbage on a warm border. Make a second sowing of Beans, and, if necessary, another one of Peas. Pay attention to all plants requiring protection from frost, and have sheds cleaned out and in readiness to receive Cauliflower, Broccoli, Cardoons, &c. Have also a good store of dry litter at hand for protecting Celery, Parsley, Spinach, Onions, &c.; such precautions may turn out to be unnecessary, but prevention is better than cure, and if the litter in question is not required for protecting vegetables out of doors, it will come in handy for covering hot-bed frames a few weeks hence. Obtain and prepare a fresh supply of Pea and other stakes. Repoint and otherwise render usable the old ones. Should espalier trees require new stakes furnish them at once, and repoint the old ones, which will make useful supports for young trees.

NURSERIES.

Pot on Bouvardias, Dracænas, Dieffenbachias, &c. Divide and pot singly choice Marantas, and keep them for a time in a frame inside the propagating pit. Increase the stock of any plants that are scarce. Pot off singly seedling Palms from seed boxes. Have stocks of Camellias, Orange trees, Azaleas, Gardenias, and Rhododendrons in readiness for grafting on in February and March. Young plants of Cyanophyllum magnificum, Ficuses, Medinillas, &c., must not be permitted to become pot-bound, otherwise they sustain a check; on the contrary they must be potted when they require it, supplied liberally with water, and, if practicable, have the advantage of a good bottom heat. Under this treatment good plants are soon made, and the growth formed before the end of the summer, and have time to become well ripened before next winter. Plants to be used for table decoration should, if their nature permits of it, have a strong loamy soil in preference to a peaty or spongy one, as firm soil is productive of stiff and hardy growth, not so liable to injury as that made in more open compost. Soft-wooded plants, intended for increase of stock, place in a damp, warm house or pit; Pelargoniums may be safely arranged along paths, where increased moisture and heat soon cause the production of young wood. Sow and prick off Ferns as convenient. Keep Orchids comparatively dry; but to such as are growing—as, for instance, the Pleiones—give a good share of water. If stock be required at once, divide Odontoglossums, Miltonias, &c. If these have commenced to grow, give them a little water. Imported Cattleyas, Lælias, &c., pot amongst broken crocks and a few pieces of charcoal; pot roots of Sobralias in loam, leaf-mould, sphagnum, and charcoal; and attach Vandas, and similar growing plants, to blocks with their heads downwards, so that water from the syringe may not find lodgement at the base of the leaves. Protect flower spikes and young roots from cockroaches by means of wadding placed around the stems near the base, and poison or trap them as recommended last week. Trap wireworms with pieces of Potatoes and woodlice in little pots containing dry moss; examine them every morning, and transfer the contents to a pot of boiling water.

Outdoor Department.—From pieces of ground not entirely empty lift the remaining plants, and lay them in some out-of-the-way corner. Manure and deeply dig or trench the ground and replant any plants not to be disposed of this season. Stocks for fruit trees should all be transplanted into plots according to their kind. Small and very young plants should be transplanted as soon as possible. Head back some stocks for grafting on. Protect Vines in pots by setting the pots as thickly together as possible and covering them over with a mulching of leaves or litter. Transplant young Conifers and plants with wide-spreading roots like the Elm. Four-year-old forest trees are the most saleable as well as the most suitable for permanent planting.

MARKET GARDENS.

If not already done, lose no time in sowing the third Radish crop. Ground from which Celery, Coleworts, or Savoys have been removed will suit it. Manure and deeply dig before sowing, so that the same operation will be unnecessary for the succeeding crops of this season. The earliest sown plantation requires no more protection from birds; only replace the covering in the event of frost. Remove into the alleys between the beds, every fine morning, the litter covering the second plantation, so that the plants may gather strength, become green, and also that the surface soil may get dried as well as the litter covering it. Use a long-toothed wooden rake for removing the litter and a steel-pronged pitchfork for replacing it. Rhubarb is beginning to grow a little naturally, therefore finish digging between the rows, and cover the crowns in open plantations with litter as soon as practicable. Under trees there is less danger of the crowns being injured by frost; therefore leave them to the last. It is impossible to wheel or cart manure on to the plantations with impunity; therefore get some of the workmen to fill big baskets with the litter, and others to carry them on their heads to the place where the litter is wanted to cover the crowns. The trampling of the men is much less injurious than wheeling on newly-dug ground, and it would be bad practice to cover the crowns before digging the ground. Although for forcing, the roots must necessarily be mutilated, in permanent plantations they should be very carefully preserved. Before digging the ground lately occupied by Seakale, let some women go over it and pick up every bit of root left, otherwise they will grow and cause annoyance. Cut up the best pieces into finger lengths, lay them quite thickly together on a raised bed, and cover them over with an inch or two of soil. Leave them there until March, then dibble them in lines amongst Cabbages, so that they may occupy the ground after the Cabbage or Cauliflower and a Lettuce crop have been obtained. Burn or destroy by means of lime the useless roots. Uncover during every dry hour throughout the day frames containing Lettuces. Thin and keep clean the crop. Thin to a greater extent than ordinary if Carrots are growing along with them. Replace the sashes over the frames at night, and also in the event of rain during the day, but keep them tilted up a little unless frost is expected. Dust a little lime over and amongst Cauliflower plants growing under handlights, and keep the latter tilted up. Fully expose the plants in frames, for a too hardy constitution cannot be maintained; therefore thin them out a little and plant the thinnings under handlights or half-bushel vegetable baskets. If baskets be used, keep the edges covered with soil for a few days until the plants begin to revive. Cauliflower plants, as a rule, have already made too much progress, an evil that would soon become visible in the event of frost. Keep mats over Mushroom ridges, to ward off rains, and fix them on both sides by means of pegs. In gathering the produce expose the ridges for as short a time as possible. Fill up the alleys between the second lot of Seakale beds to be forced with fermenting manure, mulch the surface of the beds a little, erect hoop frames over them, place mats thereon, and then a covering of rank litter over the whole. Heat is thus soon communicated and growth induced. Force Rhubarb in a similar manner and also Asparagus, with the exception that the latter must be covered with a few inches of soil, and have a brisk bottom heat afforded it by means of a 3 feet sunk hotbed. Manure and dig every empty space. Level before digging all uneven surfaces, such as recently emptied Celery and Asparagus plantations. Weed Onions on dry days, and transplant if necessary. Use the hoe amongst Parsley, Cabbages, Lettuces, and Endive on fine days. Collect and burn prunings and other rubbish. Transplant suckers and lay in cuttings of fruit bushes. Head down trees for grafting on and cut back branches in furtherance of the same operation.

NEW THAMES BATHS.

MANY will be pleased to learn that the question of public baths is about to be taken up in earnest. We understand that a scheme for the building of several baths in various parts of the Thames is already under the consideration of the Common Council of the city. The proposal contemplates the eventual establishment of seven bathing places, to be situated at Woolwich, Greenwich, Ratcliff, Hungerford Bridge, Chelsea, and Hammersmith; and thus to place the means of bathing within reach of the whole population. At present, only a beginning is to be made, by the erection of a bath in front of the large pier on the Surrey side of the Charing Cross railway-bridge. The plan suggested to the Corporation is that of a large pontoon, floating a large iron reservoir, with a solid bottom, and not open to the flow of the stream. It is, in fact, to be a huge iron bath, with considerable depth at one end and shallow at the other, supplied with water from the river, immersed in the stream, but practically as distinct from the tidal flow as though it were erected far away from the Thames. The water which flows into it is to pass through a filter to be arranged in the pontoon, capable of purifying about a million gallons a day. The bath proposed is 150 feet long, and 35 feet wide; is to hold about 200,000 gallons of water; and will thus allow about 50 feet of space, and nearly 2,000 gallons of water to each of the 105 persons who will be admitted at the same time. There is to be a constant change of the water, as about five times the contents of the bath are to be passed through it every day; and it is even proposed to add a small heating apparatus, of sufficient power to keep the whole of the water at the permanent temperature of about 72°. The superstructure of the bath is to contain complete accommodation for 150 persons, and some forty private baths; and though the surface is to be covered in with a roof of glass and iron, which will completely shelter it from the weather, there will be provision for ample ventilation. Let us hope that the opportunities our parks offer for forming public bathing places will be taken advantage of at no distant day, and that the offensive spectacle on the banks of the Serpentine will soon be a thing of the past.

Ink for Zinc Labels.—Take of verdigris and sal ammoniac each two drachms, lampblack one drachm, water four ounces, to be well mixed in a mortar, adding the water gradually. It must be kept in a glass-stoppered vial. Write on the zinc with the ink, after shaking it well, with a quill pen; and after it is dry you may expose it to the weather or bury it in the ground for years, and it will be as legible as when first written.

THE GARDEN.

> "This is an art
> Which does mend nature : change it rather : but
> The Art itself is Nature."—*Shakespeare.*

THE FLOWER SHOWS OF 1873.

These, in a short time, will begin to attract attention, and to give new opportunity to our gardeners to display the results of their skill and enterprise. The dates of many have already been advertised, and no doubt many a beautiful object is already undergoing some kind of preliminary preparation, with a view to its competing for honours. Early in the season as it is, perhaps one or two ideas with regard to the first principles of flower shows may not be premature. There will be so much the more time for those who are interested in the matter to think them over, and apply them, if they think proper, when the occasion arrives. The first we would name is that if the great flower shows of England are to be chiefly valued for their direct purposes, and on account of their intrinsic merits, instead of as giving special opportunities for enjoyments of a social character—in their way perfectly legitimate, no doubt, but still only accessory to the original design—the people in general must have a direct and personal interest in them. The private gentleman whose garden is known only to himself and to his immediate friends, the lady who tends her greenhouse with her own hands, watching her plants day by day as if they were children, must be made quite as welcome as the magnates. By a judicious and catholic system of prizes, every simple admirer and cultivator of flowers for "their own sweet sake" should have access to the pleasant tournament, and get their full share, as far as merited, of rewards and gratulation. When people know that honours and kindly words await success in any *bonâ fide* effort to promote floriculture, no matter how simple, so that the world is the better for it, there is a wonderful impetus given to endeavours; and it is perfectly certain that this principle only wants enlarged application in regard to our great flower shows for them at once to become a part of the life of the nation, and one of the best signs and certificates of its progress in good taste and good feeling. The main idea of the flower show is, of course, to encourage popular taste for good flowers and to stimulate enquiry and zeal as to the best mode of producing them; and when this idea is carried out effectively, a noble moral end is served, as well as the proper and honourable one of self-interest. To give abundant realization to it, we conceive that all schedules of prizes should give plenty of chance to the exhibitors of "miscellaneous plants," and of "single specimens" of old-fashioned, it may be, but still lovely things that it is pure nonsense to talk of as having gone "out of fashion." If this be true, then it is high time they came into fashion again, and were allowed to occupy their proper places. The simplest thing, well grown, with plenty of thought and heart put into its culture, is every bit as creditable, and as deserving a place in the flower-show, as the newest Dracæna or Caladium. Half a dozen times at least have we known some dear old rejected plant of the modern school brought out in such exquisite form as to be taken for some wonderful importation from the antipodes. While the old-fashioned things and those which may perhaps be contemptuously called by some persons, "everybody's flowers," should thus be let have their fair share of standing room, there should be encouragement given likewise to artistic groups. What if they do happen to be constituted sometimes of the familiar and the inexpensive? So much the better, for if a man loses his aptitude for seeing beauty in what is simple and familiar, depend upon it just in that degree he impairs his aptitude for discerning it in the rare and costly. A flower-show that brings fifty people into the arena, and thus causes the race to be so much the more "neck and neck," will always do incomparably more good to floriculture as a national love and a national pastime—and pride too, for that matter—than one that is left in the hands of some half dozen, to compete with whom is impossible. This good end, we repeat, is ensured by a judicious and liberal encouragement of the single specimen growers, and the admirers of flowers that were the delight of accomplished minds before ever sensationalism was invented, either indoors or out of doors. It is true that this class of exhibitors has never been forbidden to come forward; but have they ever received straightforward and liberal encouragement to do so?

Secondly, we hope to see our exhibitors striving this year more to produce that grand and sweet general effect, that charming *coup d'œil* which contributes so profoundly to the usefulness of the flower show. Nice plants are often lost through being ill-placed, or with contrasts that fail to bring out their peculiar features of excellence. There should always be a sense of good *vis-a-vis*, and always a secret impression of the picturesque, or what have we learned from marshalling our plants in the garden borders? Depend upon it, the first principles are just the same that rule the true arrangement of the flowers and shrubs in a good garden, the leaves and corollas in a bouquet worthy the name, and the plants that are intended to make the Show. To say that there is not "time" for this will not do. Say rather that the manipulator has not brought sufficient taste and knowledge to his task. Good general effect likewise demands that the individual plants should none of them be in a state of unhappy constraint. If you want to spoil the really picturesque and permanently instructive and valuable part of the flower show, by all means dress up the plants in such a way as to bring every bit of colour to the front, swamping and abolishing the green, and whenever convenient enable the visitor to see the scaffolding within, and be reminded of those structures of old which went by the name of "whited sepulchres." Nature always intended that her plants, like our honest men, should be seen "through and through"; any one who accustoms himself to admire mockery in plants, may not unreasonably be suspected of inaccuracy in more important things. Nature, spontaneously, never deals with her produce as it has been the practice, now happily becoming subdued, and tending, we hope, to extinction, to deal with the Azalea when said to be "faced." Those specimens of the gardening art will always be the most permanently pleasing in which a due balance and proportion of leaf and blossom is preserved, and a certain elegant freedom permitted to every part. Rampant-growing and over-luxuriant plants of course must be made becoming, and the most is to be made of a plant's wealth of purpose and fecundity; but that is a very different thing from constraining the expenditure of force all to one side, or after some arbitrary fashion. Far away prettier than were ever any of those gigantic cones, sugar loaves, and fans, one all crimson, another all white, as if they had been dipped in a dyer's vat, and were now put in the Show to get dry, are those little imitative trees made by training, so as to have a single stem, Palm tree fashion, and a graceful head of branchlets, foliage, and flowers, the same whichever way you look. It may not be quite right to make one plant simulate the outlines of another, but it is unspeakably better to do so than to make them caricatures of "geometrical solids" or peacock's tails. The public, who are generally very good judges in matters of common sense, though not, perhaps, in the merits of individual plants, never really relished it; and we feel assured that when the unbiassed forms of nature are made the rule and leading features of flower shows, the public will award them a far more cordial amount of approval.

Thirdly, and lastly, we hope that every succeeding year there will be more and more encouragement given to displays of the produce of the kitchen garden and the fruit garden. Beauty, it is true, is a larger fact than so-called "utility." That was a sound doctrine, however, of the old philosophers when they made their "kalon" or the perfectness of beauty, to consist in the combination with the lovely to look at, of that which is economically serviceable. A gardener is never better employed than when he is striving to improve the size and quality of his Grapes and Lettuces. Wise men want prose as well as poetry; substantials for the dinner-table as well as beauty for the boudoir and the conservatory. We hope accordingly that a side-table, or better still, a lateral tent for fruits and vegetables, may always be made a proviso and a feature of every show.

NOTES OF THE WEEK.

—— Lord Stamford sends us from Enville Hall a twig of Horse Chestnut bearing young green and fairly developed leaves. The whole tree has opened into leaf in the same manner. After this the celebrated tree of the "Twentieth March" ceases to be so remarkable.

—— Our table is now graced by a pot of the beautiful and true smaller Daffodil (Narcissus minor) in perfect bloom, sent by Mr. Ware, of Tottenham. In addition to its great merits as a rock and border flower, this, from its distinctness from the ordinary type of Daffodil grown in greenhouses, is well worthy of pot culture, for the sake of a very early bloom in winter.

—— Mr. Cole, after fifty years' public service, has announced his intention of resigning his post in connection with the Science and Art Department. It would be difficult indeed to estimate the extent and value of the services performed by Mr. Cole in behalf of science. Some of our provincial botanic gardens, such as that at Dublin, are now under the control of his department.

—— We have received Mr. David Thomson's "Handbook of Fruit Culture under Glass" (Blackwood), a book which will be welcome to many. If we mistake not, a good deal of the matter of the book was originally published in the pages of the *Gardener*, which, however, does not impair its usefulness. We hope to notice the book more fully at an early date.

—— A report has been made by the Parks and Open Spaces Committee of the Metropolitan Board, stating that Messrs. Hooper, of Covent Garden, had presented 950 Irises, and that Messrs Barr & Sugden had furnished 1,625 bulbs for planting in the ornamental grounds of the Victoria Embankment.

—— Nine hundred and eleven tons of Broccoli, the growth of West Cornwall, have been conveyed by rail to London and elsewhere over the Cornwall line in about six weeks to the 12th inst. In the corresponding period of last year the quantity amounted to no more than 168 tons. The absence of frost may be assigned as the reason for the increased successful produce, so advantageous to the cultivators and beneficial to the railways.

—— In the Orchid-houses of Mr. Day, of Tottenham, are some excellent specimens of that favourite tribe of plants now in full beauty. Amongst these are Oncidium ornithorynchum, laden with flowers, and amongst the plants of this Oncid, besides the rose-coloured flowered ones, there are others that bear pure white blooms. On O. pulchellum there are fifty flower-spikes; Aerides giganteum is bearing two large flower-spikes; and Epidendrum macrochilum is also excellently well flowered. Besides these there is, amongst many Phalænopsids, a plant of P. Schilleriana—a fine broad-sepalled variety, with upwards of seven dozen flowers; Cypripedium Reichenbachii, a pretty species; and various kinds of Masdevallias, including Tovarensis, ignea, and Veitchiana, flowering freely.

—— In carrying out alterations on the Columbia Market estate, purchased by Baroness Burdett Coutts for the purpose of making public improvements in the neighbourhood, the Baroness cleared a triangular piece of land at the corner of Crab Tree Row and Hackney Road, on which stood a number of dilapidated houses, and formed the area into an open space for the benefit of the tenants of the Improved Industrial Dwellings, and other buildings in the locality. The Baroness is now about to plant this open space with trees, and also to place circular seats around them for the twofold purpose of protecting the trees, and also to be of use to the public in fine weather. In addition to the trees and the seats a number of "rests," similar to those in Piccadilly, are also to be erected, after which it is the intention of the Baroness to have the land legally made over to the Bethnal Green vestry, so that the same may be preserved as a free and open space for ever for the benefit of the inhabitants.

—— An interesting account is given by the *New York Sun* of the Ramie Plant, or Chinese Grass. Considerable attention is now being given by the planters in some parts of the South to the cultivation of this plant, which grows well in Florida, Georgia, South Carolina, and, in fact, almost anywhere from latitude 33° southward to the Gulf of Mexico. In Louisiana some of the planters are replacing the Sugar-cane with Ramie, which does not require replanting, demands comparatively little labour in cultivation, and entails no great expense for machinery to prepare it for market. So far as known, it has no insect enemies, its fibre is less bulky and more easily transported than cotton, and it is sure of a ready sale, at remunerative prices. At present the fibre sells in England for 240 dols. per ton of 2,000 lbs., or 8¾ cents. per lb. The fibre, which forms its commercial product, is the inner bark of the stem, and when exposed to view by separation from the husk, presents a brilliant pearl-white lustre. This fibre is longer and more uniform than any other except silk; it is stronger and more elastic than either hemp or flax; takes colour as well as a good quality of silk; and when properly prepared from the raw material, may be spun into fine yarns, suitable for mixing with wool in the manufacture of Delaines, worsteds, and other light fabrics. Without admixture it can be woven into fabrics which, it is said, will surpass the finest linens in beauty, strength, and durability.

—— Some of the large-leaved or Megasea section of the Saxifrage family are now coming into flower about London. For these plants this is remarkably early.

—— During the month of November there were 9,529 barrels of Apples sent over the Wilton (New Hampshire) Railroad, destined for England.

—— The Microscopic Society have determined on giving a *soirée* at the approaching Royal Horticultural Society's Exhibition at Bath, devoted, as far as possible, to horticultural subjects.

—— The cold at Chicago and in the Lake districts generally is so severe that it is feared the fruit trees in that quarter will be destroyed.

—— A public and gratuitous class for instruction in fruit culture and market gardening is held twice each week in the salons of the scientific societies in Paris.

—— Mr. Ware has sent us some specimens of the interesting Narcissus papyraceus, now, and for some time past, in flower in his nursery at Tottenham. This is a good addition to very early spring plants, the flowers being pure white and delicately scented.

—— Mr. Barr writes to us as follows.—"On the 20th inst. I had in bloom, in my trial ground at Tooting, Cyclamen Atkinsi, pure white blotched with crimson; Cyclamen coum album, blush white, blotched with crimson; Cyclamen coum vernum, rich magenta; Scilla bifolia, clear blue; Scilla sibirica, intense blue; a stray bloom of Triteleia uniflora, with its white beautifully porcelain-shaded flower; Narcissus papyraceus, white; Bulbocodium vernum, with its beautiful rich lilac naked flowers; Crocus Aucheri, golden yellow; Crocus variegatus, white and purple, and Crocus reticulatus. I never," he adds, "observed the beauty of this Crocus so strikingly before this season; the brown-black band with the golden margin are most beautiful when the flower is closed, as is also the mass of golden-yellow when the flower is open; Crocus biflorus, with its black striped petals, concludes my list of bulbs in flower at present."

—— Mr. A. W. Dillard, in the *Mobile Register*, endeavours to account for the generally acknowledged increase in the severity of the winters in Alabama. In all European countries it is commonly believed the climate has become warmer in proportion as the forests have been felled and the land cultivated. In Alabama, however, similar operations have apparently produced opposite results. The writer, however, believes that the general dryness of Africa, and especially of the Great Desert, has no inconsiderable effect on the climate of Europe, and accounts for the great difference of temperature between the same latitudes in Europe and America. He accounts for the change of climate in Alabama and other southern American States in the following way:—"The felling of our Southern forests gives a more unrestricted scope to the north-western winds, chilled by the snow on the Rocky Mountains and the ice of the northern lakes and rivers. These bleak winds are not counteracted by warm gales, blowing from a dry country, such as Africa; consequently they exert all their chilling influence on our climate. The gales which we have from the south are impregnated with a good degree of moisture, and so add to the cold consequent upon the blowing of the wind from the north."

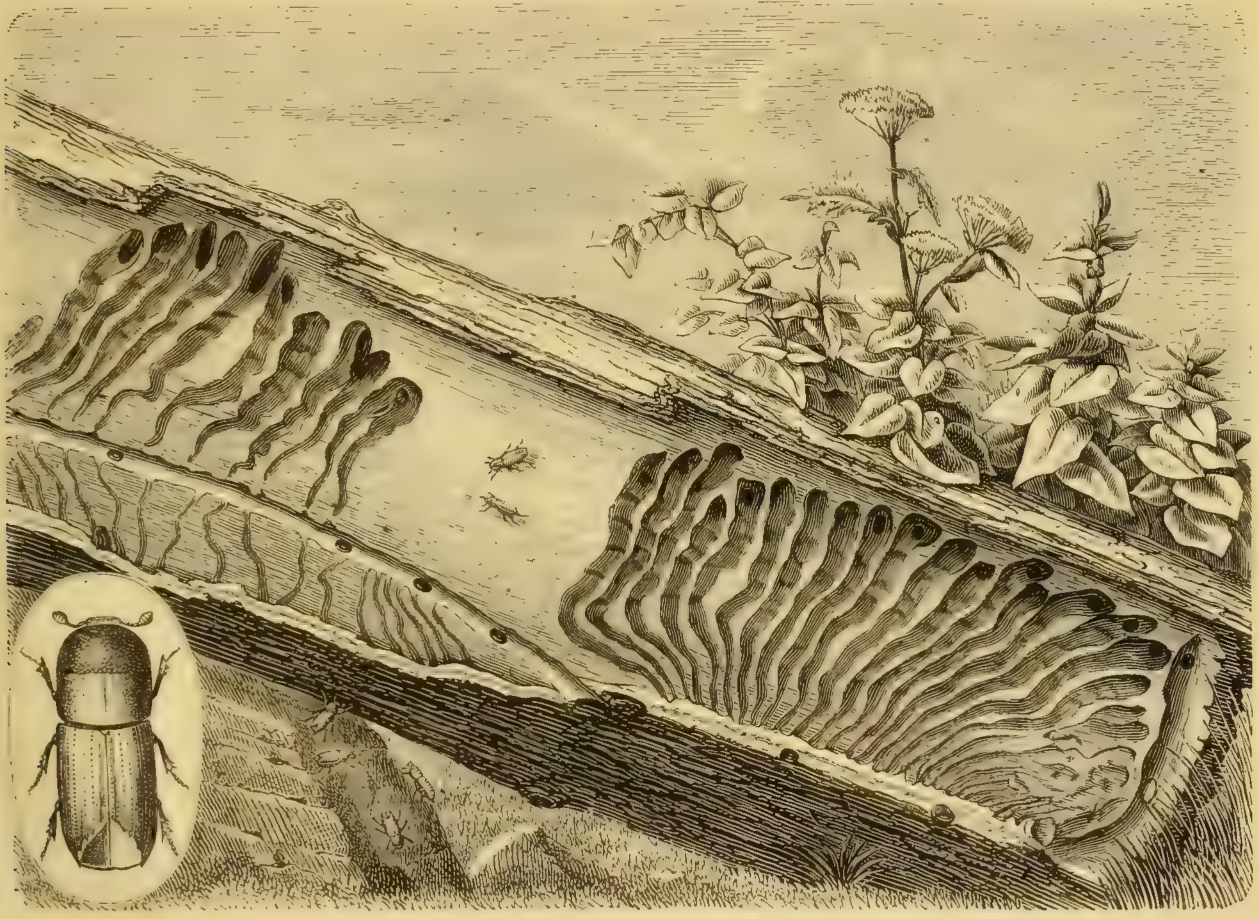
—— The following is an abstract of the Custom-house regulations to be observed in respect of goods sent from foreign countries to the Vienna Universal Exhibition. The frontier Custom-houses will direct goods (without opening the packing-cases and parcels) to the chief Custom-house in the exhibition. Detailed list of contents of packing-cases must accompany each consignment. The chief Custom-house office examines goods, and books the detailed lists. Foreign commissions must keep an account of the goods received. Detailed list of contents has only to specify goods according to commercial denomination as to kind and quantity. No goods will be allowed to be taken away without a permit. Goods going back will be directed by the chief Custom-house to the respective frontier Custom-houses. Goods remaining in Austria or Hungary are liable to import duty. Goods, owners, and commissions, are responsible for the amount. Agents taking charge of goods incur the same responsibility. Discrepancies between the contents of packages and the detailed list, and the unauthorised removal and sale of goods, will be dealt with according to law. Tobacco and goods manufactured thereof are not permitted to be sold in the exhibition, nor to be brought away for such purpose. Goods not entered for exportation three months after the close of the exhibition are liable to import duty.

GARDEN DESTROYERS.

BARK-BORING BEETLES.

(TOMICUS (BOSTRICHUS) TYPOGRAPHUS.)

The bark-boring beetle whose workings are figured in the accompanying woodcut is known by the name of Tomicus typographus. The beetle itself is figured in the left hand corner much magnified, and individuals of the size of nature are represented in the workings. It is brown in colour, and the larva is white, with a yellowish head and a brown mouth, and has neither feet nor eyes. It lives under the bark of Pines and Firs, and is reputed to do them much damage. A passage from Wilhelm's "Recreations of Natural History," quoted by Kirby and Spence ascribes to this insect the destruction of millions of trees in various parts of Germany. We are very sceptical on the point, and are therefore bound to reproduce the authority against our view:—"The insect in its preparatory state feeds upon the soft inner bark; but it attacks that important part in such vast numbers (80,000 being sometimes found in a single tree) that it is infinitely more noxious than any of those that bore into the wood, and such is its vitality that though the bark be battered, and the tree plunged into water, or laid upon ice or snow, it remains alive and unhurt. The leaves of the trees infested by these insects first become yellow; the trees themselves die at the tops, and soon entirely perish. Their ravages have long been known in Germany under the name of wurm-trökniss (decay caused by worms); and, in the old liturgies of that country, the beetle itself is formally mentioned under its vulgar appellation, the 'Turk.' This pest was particularly prevalent, and caused incalculable mischief about the year 1665. In the beginning of the last century it again showed itself in the Hartz forests. It reappeared in 1757, redoubled its injuries in 1769, and arrived at its height in 1783, when the number of trees destroyed by it, in the above forests alone, was calculated to amount to a million and a half, and the inhabitants were threatened with a total suspension of the working of their mines, and consequently with ruin. At this period, these insects, when arrived in the perfect state, migrated in swarms like bees into Swabia and Franconia. At length, between the years 1784 and 1789, in consequence of a succession of cold and moist seasons, the numbers of this scourge were sensibly diminished. It appeared again in 1790, and so late as 1796 there was great reason to fear for the few Fir trees that were left."



Tomicus typographus.

This is very circumstantial, and we do not at all doubt that the statements as to the destruction of trees, &c., are quite accurate; but we wholly repudiate the idea of giving any weight to the opinions formed of the cause of the mischief, unless where they are corroborated and supported by similar facts, observed in our own times. We know that a large part of the natural history of those older times is wholly untrustworthy, especially so far as regards the explanation of phenomena, and even although it had been otherwise we cannot be expected to give more weight to the opinions then formed than we would to opinions similarly formed now. And certainly now the coincidence of trees dying at the time they were attacked by Tomici would never be accepted as proof of the latter being the cause of the former without much and careful examination into every collateral circumstance, and a search for any other cause to which it might possibly be ascribed. We therefore do not feel called upon at all to examine or attempt to account for the facts above quoted, or many similar ones which might be quoted. We claim to be entitled to set them aside, and to be guided solely by facts occurring in our own time which have been subjected to the scrutiny of modern science, and regarded by that light no warrant is to be found for attributing to this insect the power of inflicting any serious damage. In fact its purpose and its powers are similar to those of the Scolytus destructor, viz., to prepare for the removal of decaying or moribund trees, but also with power, under special circumstances, to do a certain amount of mischief, which, however, cannot be carried far, as the exercise of that power, improperly applied, that is, applied to the injury of sound trees, brings with it the creature's own destruction. The resemblance between this species and the Scolytidæ, both in their habits and in the form of their burrows, has struck older authors; and it is curious to find that resemblance adduced by them to support the then opinion of destructiveness of the Tomici, just as we adduce it now as an argument to the contrary. Loudon ("Arboretum," iv. 2,143) says, "Its proceedings are also very similar to those of the Scolytus (to which genus, indeed, it is very nearly allied); so that it would be as erroneous to attribute the destruction of the German forests to other primary causes, and to consider the Tomicus typographus as a secondary cause, as it is to deny that the Scolyti are the cause of the destruction of the Elms around London." As that is now very generally denied, we must, upon Loudon's own showing, be entitled to regard the Tomicus from the same point of view. We believe that it may sometimes attack sound trees when it is present in numbers and cannot find trees suited to its wants (that is, feeble and weak trees with the flow of sap languid or almost absent); but when it does so, the mischief checks itself; the flow of sap in the sound trees is too abundant and drowns the Tomici that have ventured to open its floodgates. A. M.

Slug Caterpillar of the Pear.—I send you the life-history of the little Pear pest (Selandria æthiops), which I have extracted from my note-book. In April last, about the 15th, four of these little sawflies came from their cocoons. The larvæ had been noticed to be very destructive to the young Pear trees at York during the previous summer, feeding on the epidermis of the leaves, and exposing to view the network of the veins. Whole branches were thus disfigured. The eggs, as in the case of the Gooseberry sawfly, would seem to be laid along the mid-rib of the leaves. The larva is blackish and slimy, something after the manner of the Cioneus larva, but more attenuated and leech-like. It is a voracious feeder, like most of its tribe, and at each moult the skin may be seen adhering to the leaf or hanging loosely to the edge. The transformation is subterraneous. The cocoon is brownish, and slightly larger than that of the Gooseberry sawfly, whose habits of life are so admirably described in the letters of "Rusticus." The perfect insect is black, with the four front legs hyaline. The saw apparatus is very visible. It is more stunted in form than the Gooseberry sawfly.—*Peter Inchbald* (*Hovingham Lodge, near York*) *in the Field.*

Phylloxera Quercus.—The recent account of Phylloxera vitifoliæ or Vastratrix, in the *American Naturalist*, mentions that it is oviparous in summer, and hybernates in winter, and that there are no eggs then. In this it agrees with Phylloxera Quercus, which I have often observed, for more than twenty years, to lay eggs in summer and autumn, which eggs are shortly hatched, and their occupants do not lay eggs, but pass away in early winter, except a remnant, which must serve for the continuance of the race. As the moving power of the creature is very little, it cannot go far from the leaf, to whose recesses it must resort in the spring; and the means whereby it shelters itself from severe frost have not been observed. Other families of aphides pass the winter in the egg-state; and Chaitophorus aceris is remarkable on account of its æstivation, or passing the summer in a suspension of growth, as is the case with some caterpillars; this occurs in a very early stage of its existence. P. Quercus is represented, beyond the Atlantic, by another Phylloxera (P. Rileyi, of Lichtenstein), which frequents Oaks in North America.—*Francis Walker, in Newman's Entomologist.*

Osier-bark Steep a Cure for Ants.—Mons. Colin Lebert, of Blois, has found that water in which the bark and parings of the Osier have been soaked, will remove ants. On one occasion, he says, perceiving a young tree which was infested with ants, I sprinkled it with the Osier steep, and to my surprise the ants fell off as it immediately dead. The result so struck me that I determined to again try the effect on a nest; this time I was sure of the instantaneous effect, and I concluded this water was certain death to them. I have also proved that it is in no way injurious to the plants; on the contrary, when once freed from ants, they thrive with greater vigour than before. The Osier steep forms, therefore, a simple and effective means of getting rid of these little depredators.

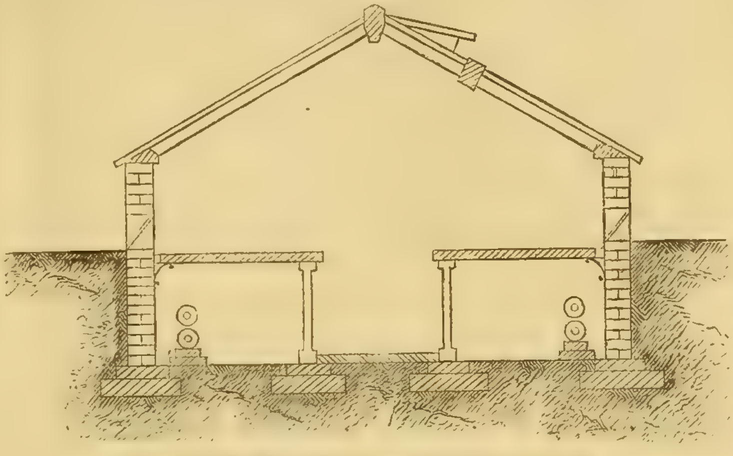
THE INDOOR GARDEN.

COOL ORCHID HOUSES.

A FEW words concerning these may be of service to those who are about to begin to grow cool Orchids, and have no special convenience for doing so. In the first place, no very elaborate or expensive structure is required, and no costly heating apparatus is requisite beyond the amount of hot-water pipe necessary to exclude frost from a common greenhouse; there will, therefore, be a saving in fuel and labour, compared with the expenses attending the culture of Orchids which can only be grown successfully in a close humid stove. For the culture of Odontoglots, Masdevallias, Disas, &c., I would recommend a small span-roofed or lean-to house; either will do, though a span-roofed one is, perhaps, the more convenient of the two, if a suitable site can be obtained. If a span-roofed house is decided upon, do not build it too large, say, 12 feet wide and 8 feet high. This will be quite large enough to commence with, and will be more likely to give satisfaction than would a larger structure; the side walls should be 9 inches thick, and about 5 feet or 5 feet 6 inches above the ground level, leaving spaces for ventilation, as shown in one of the annexed sections, which is a representation of the cool Orchid house at Ferniehurst. Top ventilation should also be amply provided for by a longitudinal flap (as shown in the illustrations), which can easily be raised from the inside. The ventilators in the side walls may be closed by means of wooden slides outside. A house of this description of the simplest construction, heated efficiently, as shown, by a flow and return 4-inch pipe on each side, may be erected at very little cost. It can be constructed of any length; one from 60 feet to 70 feet would be large enough for a good-sized collection, and this length might very advantageously be divided in the middle by a glass partition and door, so as to allow of one compartment being kept rather warmer or drier than the other, as might be required. The staging or side benches will be about 4 feet wide and about 4 feet high, or one compartment might have the benches 3 feet high, so as to give more head room to larger plants. These benches should be either stone or slate slabs placed upon cast-iron supports. Iron is better than wood, which will naturally decay quickly in a humid atmosphere, and might give way suddenly, causing sad damage. This really happened in the case of a celebrated collection near Manchester not long ago, and did very serious damage to some of the finest Phalænopsids in this country. In the centre of the house a cistern may be constructed, into which all the rain-water from the roof might be conducted for use inside. As has been already explained, moisture is essential to the well-being of all Orchids, and as bare slate benches speedily become dry after having been watered or damped down, it is a good plan in practice to cover them with a thin layer of cannel coal, broken up small and carefully washed. In addition to this, the benches may also be made to hold water, which, during the hot summer months, will be highly conducive to the health and vigour of the plants. The space bordering on the path beneath the side benches may be planted with Selaginella hortensis, which will soon form a fresh green carpet and materially aid in giving a neat and clean finish to the house; or a few Ferns may be planted, as shown in the illustration. During the hot summer months the plants will require to be carefully protected from the sun's rays, and blinds on rollers should be provided for that purpose. In order to prevent cold draughts from injuring the plants, it is a good plan to cover the ventilators either with perforated sheets of zinc or else to tack pieces of coarse tiffany over the openings inside the house.

These and many more little details will, however, soon suggest themselves to the mind of the attentive cultivator, who must be ever ready to counteract any unhealthy symptoms which his plants may show through being subjected to a course of adverse circumstances. The construction of cool Orchid houses does not call for any great amount of skill; they may, therefore, be erected under the direction of any intelligent workman who may happen to be about the place, in a few weeks at most, and their first cost will be but a trifle compared with the pleasure the culture of these lovely plants will afford.

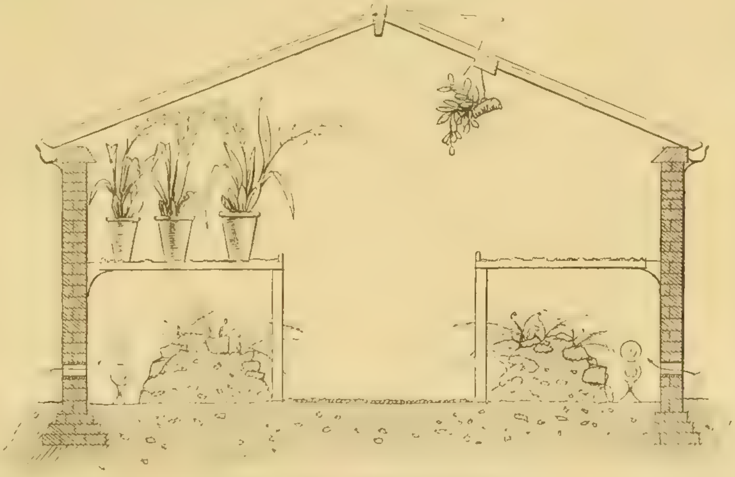
Although some Orchids grow freely in a cool house or compartment which is kept at a mean winter temperature of 45°, still there are other species that require a temperature 8° or 10° warmer in order to grow them successfully. They would both thrive and bloom in the cooler house, but not with that luxuriant vigour which true lovers of Orchids delight to see. If a house, say 60 feet long, is built it should be divided in the middle; this gives two compartments of 30 feet each, and one of these may be kept warmer than the other by the addition of an extra row of pipes, one flow and return. In this warm end many Cattleyas, Lælias, Trichopilias, Cypripediums, and Oncids may be grown, which would hardly give satisfaction to a connoisseur if grown in the cool end along with the Odontoglots. Many of the Orchids usually grown in the East Indian house will bear with absolute impunity a mean winter temperature of 50°.



Span Roofed Cool Orchid House, partly below ground.

I have known Orchids cultivated with marked success in small houses partially sunk below the ground level. Plants as a rule grow well in such houses, but there may be very good arguments raised either for or against them. The atmosphere of such houses is generally humid and genial, and they do not require so much artificial heat as houses do which are more fully exposed; they are also very convenient in being easily protected from frost by throwing a few mats over them at night. On the other hand the ground has to be excavated before such a house can be erected, and such houses are not the most convenient for lady visitors to enter; still on the whole they answer remarkably well, [not only for Orchids, but also for stove plants and Ferns. Orchids have been well grown at Syon house and at other places in these partially sunk houses. As has been previously remarked, Orchids are not so exclusive as to require a structure absolutely for themselves; indeed, I have seen some of the commoner free-flowering species beautifully grown in all manner of out-of-the-way places, both in England and Scotland. Orchids have also been grown in a Vinery very successfully by Robert Warner, Esq., of Broomfield, and others. The partial shade of the Vines and the moist genial atmosphere are highly conducive to the healthy vigour of many Dendrobes, Lycastes, Anguloas, and Odontoglots, and the crop of Grapes is a very agreeable secondary consideration. Mr. Warner has more than once advised the association of Orchids and Vines, and he moreover very truly asserts that "there are few Orchids worth growing which might not be cultivated under Vines." I know from experience that many choice Dendrobes make a vigorous growth in the genial heat of a warm vinery in which bright sunlight is subdued by the fresh green foliage above, and this is equally true of many other genera. The accompanying sections of houses (see p. 67) will be found adapted to the culture of Orchids under different conditions, and similar houses may be erected at a very moderate outlay. F. W. B.

(*To be continued.*)



Cool Orchid House at Ferniehurst.

LUCULIA GRATISSIMA.

THOUGH one of the oldest of conservatory plants, this is rarely met with; and the wonder is that it is not a conspicuous object in every conservatory. Easily grown, blooming throughout autumn, winter, and spring, showy, ornamental, and gratefully fragrant, it is one of those plants that deserves all that can be said in its favour, as every one will acknowledge who has seen it in full beauty. It is considered rather difficult to propagate by cuttings. Perhaps it is so, compared with some things; but once the plant is rooted and established, it will grow as freely as a common Laurel if planted out in a bed. It will grow well under even adverse circumstances, as I can testify from experience, but will not flower freely, nor at all sometimes, if the winter temperature is often allowed to fall below 45° or 50°. I have had it in fine bloom in a greenhouse during mild winters, after a favourable summer had matured the shoots well and early, and at one time I was under the impression that protection from frost was all that was required in winter to flower it successfully; but after a good many years' experience I find it requires to be grown in an ordinary greenhouse temperature with plenty of air and light during the summer, and kept warm enough in winter to promote the free expansion of the flowers. If it receives this treatment, it will abundantly repay the trouble. It associates well with Camellias, Oranges, Acacias, Heliotropes, Heaths, and such like. When Camellias are its companions a compromise might be made by keeping the night temperature at 40°, and allowing it to rise from 5° to 10° during the day. This would suit all such subjects well, and it is much better to select a few really good things that can be grown in a healthy way together than attempt to grow too many varieties where one house has probably to hold all. Though it is much better to begin with an established plant from the nursery, I may state that the Luculia is propagated by cuttings of the young shoots about May or June, or when the wood is just getting middling hard. They should be inserted in a mixture of sand and leaf-mould, least of the latter; have a gentle bottom heat, and be covered with a bell-glass, and shaded until they are rooted, when they should be potted off and grown on for a bit in a vinery until fairly established. After this the greenhouse is the place for them. One good plant will be enough in a moderate-sized house, and it should be planted out in a mixture of loam and peat, or leaf-mould and silver sand, though I have seen it growing vigorously in strong loam alone. In order to get the plant up to a good size as soon as possible, the shoots should not be cut back, but tied down, or in any way that is found most convenient to form the foundation of a good plant. In this way the shoots will break at every joint, and in a year or two a large plant will be the result. Once this is secured the shoots should be cut in pretty closely every season after flowering, in order to keep a well furnished bush. The shoots grow about 18 inches or 2 feet every season, in an ordinary way, and each shoot is furnished with a flower truss at its extremity. During the summer the plant should have plenty of water at the root, and liquid manure frequently when the soil is well filled with roots. J. S.

PSILOTUM TRIQUETRUM (Swz.)

The following remarks on the occurrence of this plant on decayed tubs in the Palm house at the Royal Botanic Gardens, Edinburgh, were made by Mr. James McNab at the meeting of the Edinburgh Botanical Society held on the 9th inst.:—

About twenty-five years ago, while visiting the gardens of Sir George Staunton at Leigh Park, in Hampshire, I was surprised to find the surface soil of several tubs in one of the large plant houses there covered with tufts of the Psilotum triquetrum, a Lycopodiaceous plant, native of the West Indies. The Psilotum is a dark evergreen perennial herbaceous plant, with triangular stems, but destitute of leaves, resembling in some respects the Bilberry (Vaccinium Myrtillus) in its winter condition. Mr. Alexander Scott, who was then gardener at Leigh Park, could give me no information how it got into the tubs, his first impression being that it was the Bilberry which had come up in the rough turf soil used for potting purposes. For the last ten or twelve years the Psilotum has been growing on the decayed portions of several tubs in the Palm house. It first showed itself on the sides of a tub in which a large Bamboo cane grew, and afterwards on a partially decayed one in which a large Banana was cultivated, but that had been previously used probably for a Palm or some other arboreous plant. It is now abundant on a tub 8 feet in circumference and 2½ feet deep, in which a plant of Sabal Blackburniana has been growing for the last ten years. Besides the tufts which grow from the sides, some also proceed from beneath. The tufts are pushing through the green paint on the outside, and the tarred inside, as well as through the bottom, which has been tarred both inside and outside. How the Psilotum got into these tubs is quite a mystery. If increased by spores none have been seen growing on the neighbouring tubs, although several are much decayed, nor am I aware of any pot plant of Psilotum ever standing in the Palm house.

The Psilotum is also growing on the surface of several pots standing in a detached plant pit. It was chiefly on pots in which seedling Bamboo canes were growing, where the roots had filled the pots, so that little room was left for soil. It is also growing close to the stem of a South American Euphorbiaceous plant (Pedilanthus tithymaloides). All the plants which come up naturally are 8 inches long, being dwarfer than the ordinary form of Psilotum, also finer in habit, with somewhat pendant tops, not unlike the Psilotum dichotomum of Wild. When taken from the tubs and cultivated in pots, it becomes stronger, resembling the true P. triquetrum, except in the points which still remain pendant. Our original plant of P. triquetrum, about 1 foot in height, stands in a separate plant pit, with a collection of Lycopods and Ferns, but shows no symptoms of increasing, as no young plants have ever been seen in any of the neighbouring pots.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Saccolabiums.—At page 43 of your last issue, "F. W. B." says "There is a white variety of Saccolabium, called Holfordianum by growers." This is doubtless a slip of the pen, for Harrisonianum, which is a white-flowered variety of S. violaceum, whilst Holfordianum is the largest and most brilliant coloured form of Sputtatum. Although I feel fully sure your correspondent is aware of this, the error should be corrected for the benefit of those of your readers not so well conservant with the facts.—G.

Acacia Riceana.—This is an extremely graceful Acacia, and is well worthy of extensive cultivation. Its long peniulous shoots, covered with flowers their whole length, are exceedingly useful for decorative purposes. It may be trained either as a standard tree—which is its natural habit—or as a climber. I have a plant about twenty years of age, growing at present under rather adverse circumstances, with its roots outside, and trained up the rafters of a greenhouse, which is never fired except to exclude frost; yet it grows well and flowers during the winter most freely, but it never ripens its seed. For cutting for bouquets it is a fail-me-never. It should be in every collection of greenhouse shrubs.—J. S.

The Orange as a Conservatory Plant.—The Orange deserves to be included among winter and spring blooming plants, for the sake of its blossom, which, as everyone knows, is exceedingly well adapted for bouquets and decorative purposes. The Orange requires to be studied a little to keep it in good health. Plants in pots moved hither and thither are rarely to be seen in good condition, but are sickly specimens or the victims of scale. It is a plant that does not require a high temperature; but it likes a steady one. A good bush planted out and allowed a minimum temperature of 45°, root and branch, during the winter, and a greenhouse temperature in summer, will yield every spring a perfect load of blossoms; and its dark luxuriant foliage will be no harbour for scale, which I have seen disappear from a plant entirely after it was planted out and treated liberally. The common Orange, or vigorous-growing kinds, are, I think, the best for flowering purposes, and stand cutting as well.—J. S. W.

THE FLOWER GARDEN.

THE CARNATION AS A BORDER FLOWER.

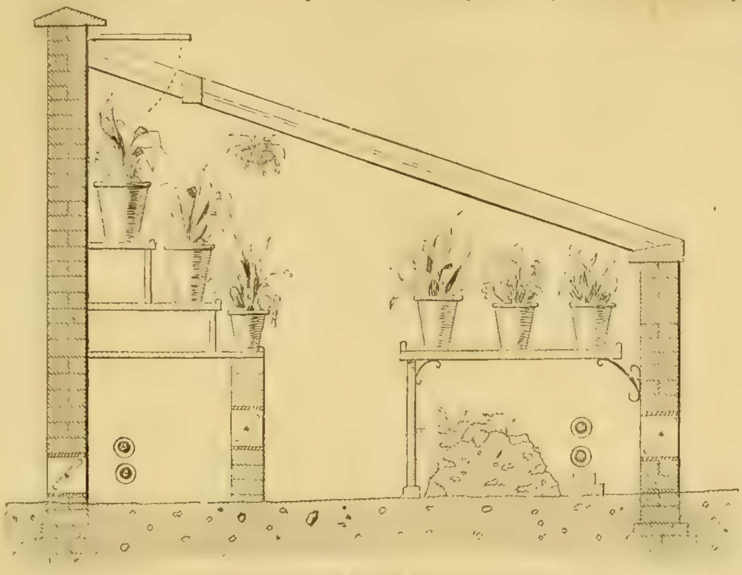
Of all flowers for a button-hole, give me a sweet-scented clove Carnation or pretty edged Picotee. They have a long stem expressly suited for the purpose, a rounded form that is always neat and finished, and a variety of markings and colouring that renders continued sameness impossible. I am fortunate in having a large number of plants, both of Carnations and Picotees; and during the past summer, from the time the earliest Pink flowered down till this present time of writing, on the 4th of November, I have not at any time been without a flower of these dear old favourites. The reason is plain enough. A few years ago I commenced to raise Carnations and Picotees from seed. I had been supplied with a mixed packet of seed of a first-rate strain; but this was in the spring sown along with seed of other hardy perennials in the open ground. It came up quite quickly and grew well. In the following winter the plants were put out into a bed some ten inches apart, and I had next summer one of the most charming collections of these beautiful flowers I have ever seen thus roughly grown. From that time forth I have always annually sown a pinch of seed, to keep variety and plenty of stock. Seedling plants in the hands of amateur cultivators whose space is limited should in the winter be planted out into shrubbery borders amidst other perennials, or in mixed beds, and with profit also in odd nooks and corners of the kitchen garden where vegetables cannot be cultivated. The amateur can find no pleasanter occupation than when engaged in the work of neatly supporting with a small stick and a piece of bast matting the stems that carry the flowers of his hope, not bundling them up in an ungainly mass, but with care and taste. No flower looks so untidy as that of a Carnation when left to sprawl at its own sweet will, and after blooming is over the stems should be cut away. On no account should propagation by layering be neglected; herein lies the great secret of a constant supply of young healthy plants short of raising from seed. Old plants will soon become leggy and ungainly, and the flowers thin and small; propagation by cuttings or pipings is far too uncertain to make me recommend it for adoption. If every year, during the early part of July, the amateur operator will select some of the best of the new growth, strip from the base a little of the foliage, give on the under side of the stem with a sharp knife an oblique cut half-way through, then with a trowel loosen the soil beneath, bury the cut portion in it, and keep it in its place by a stone, all is done that is necessary to secure for the next year an abundance of fine young plants that will afford bloom for several months. The replanting of this young stock each year should be something more than a mere formality. The Carnation will amply repay for any little extra labour that is expended upon it, even though the mission of its flowers be but to decorate button-holes. The soil should be deeply broken, and a little rotten manure added; and, when the layering is performed, a little fresh loam mixed with sharp sand helps the rooting. Frequently these layered plants will in the autumn throw up premature flower stems, that would be useless if left out for the winter, although some of the very earliest may, if the autumn be mild, expand their blooms up till the month of November. It is worth lifting up some of these precocious fellows with good balls of earth, and potting them up, as in the temperature of a greenhouse some of them are not unlikely to yield flowers through the winter, and will be certain to do so if kept in a little heat. A. D.

COLOURS IN THE FLOWER GARDEN.

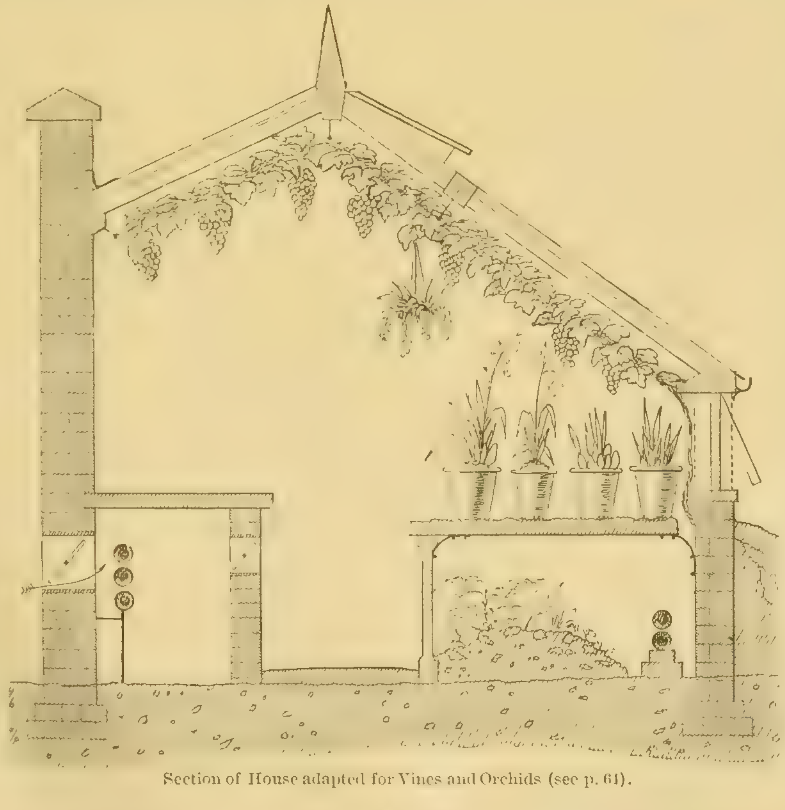
M. Buffon, a good many years ago, made a very interesting discovery, which is practically very useful, and very closely approaches in correctness the diagram principle in determining the colours which contrast. He discovered that if a wafer be placed on a white sheet of paper, and gazed steadily at for a few seconds, and then the eye removed to another part of the paper, a spectrum of the same size as the wafer and of its contrasting colour is seen. The spectra are, however, rendered more distinct when the wafers are looked at on a dark ground, and the eye then directed to a white ground. This simple fact is the reason why black printing is more comfortably and easily read on a white ground than red, for red would have a contrasting green spectrum floating before the eye on a white ground; white being the contrast to black, the spectrum is prevented in such a combination. By this simple process, as well as by the aid of the diagram, the colours at the disposal of the flower gardener can be arranged according to the law of contrast. The following is a table of the colours and their contrasts:—

Black	White.	Green	Reddish Violet.
White	Black.	Blue	Orange.
Red	Green.	Indigo	Orange Yellow.
Orange	Blue.	Violet	Bluish Green.
Yellow	Indigo.		

These are the contrasting colours as determined according to Buffon's spectrum discovery; and it will be found that these results closely correspond with those determined by the rules of the diagram. The merest tyro will find the application of these rules of great service in the arrangement of flowers on the principle of contrast. Of course there are intermediate shades to be dealt with not embraced by the colours included in the spectrum; and just in proportion as these shades approach the various prismatic colours, so must the rules be modified and applied. Buffon's system can always be resorted to as a guide sufficiently correct for all practical purposes, and, if followed as closely as the various shades and different heights of plants will allow, cannot fail to be of great service in flower-garden arrangements. In coming to the practical application of these rules, some may perhaps find that it is not so easy as at first appears to deal with colours which do not exactly agree with those of the prism; nevertheless, the rules still hold good, and can be applied with more or less of a decided result. In order to illustrate this, take one or two of our most popular grouping plants which have not a facsimile in our table of contrasting colours. Take, for instance, Purple King Verbena, which may be described as a reddish blue. Looking at the prismatic colours, this approaches nearest to blue; it is blue with a shade of red in it, the contrasting colour to which is green or orange. The blue being in the ascendant in the Verbena, the contrasting plant must have orange in the ascendant as the contrast to blue; but the red in the purple demands a greenish shade, and consequently the contrasting plant must be a greenish yellow, such as we have in Calceolaria amplexicaulis and C. canariensis, &c. Then, if we take an orange yellow, such as Calceolaria aurantia, multiflora, or Tagetes signata pumila, we have orange yellow, or yellow with a shade of red, requiring for a contrast a greenish blue, and which is most nearly supplied in Lobelia Erinus speciosa. Our nearest approach to black is supplied by such plants as Perilla nankinensis, Coleus, Beet, and a few others. Now, if we describe them as reddish black, the contrast of this is greenish white, and this is supplied by such plants as Koniga variegata, Dactylis glomerata variegata, variegated Pelargoniums, &c. From these illustrations it can be seen in how thoroughly practical a way the elementary rules can be applied. It is because of the law of contrast that the flowers of a scarlet Pelargonium are much more distinctly striking in the case of those varieties which have a dark green leaf without any variegation or zone, because green is the contrast to red. The most accommodating colour for contrasting with others, with considerable distinctness, is white, or very light grey, such as Cerastium tomentosum, Centaureas, and Cineraria maritima—all of which may be used as a contrast to all strong colours, such as crimson, bronzy crimson, deep scarlets, blues, and deep purples.



Section of a Lean-to Orchid House (see p. 64).



Section of House adapted for Vines and Orchids (see p. 64).

Arrangement of Colours according to the Law of Harmony.—Colours are said to harmonise when different shades blend insensibly into each other. This is easily detected by any one who has a perception of, or, as it is generally termed, an eye for colour. That which harmonises with any original colour is always next the original, and between it and the contrasting colour, in the order of the diagram. Following out this, it will be seen that red is the harmonising colour to orange, blue to violet, yellow to white, and so on. Practically speaking, harmonising colours are considered more easily detected than those which contrast. Take, for instance, red or scarlet, dark pink, pale pink, and white, and place them in the order named, and a pleasing harmony from red down to white is the result. The transition is gentle and beautiful. Then, again, take a purple-flowering plant with a shade of red in it, and place it near a crimson, or let a golden-leaved Pelargonium be associated with some of our silvery-foliaged plants, and a most delicate and pleasing harmony is produced. These examples are enough to show what is conveyed by the term harmony of colours; and there are few things that afford more pleasure to an eye, however slightly trained to colour, than the contemplation of the soft gradations that may be worked out in a bed of flowers associated according to the principle of harmony. It is somewhat degrading to the art, to look upon it merely as a means of embellishment capable of only tickling the eye. Harmony and contrast may be illustrated with charming effect in one bed. What, for instance, can be more lovely than a centre of yellow, with a corresponding zone of white, finished off with a fringe of blue or purple? The two centre colours harmonise, while the blue contrasts. Or if two contrasting colours—yellow and blue—are mixed in the centre of a bed, and edged with red, which harmonises with the orange, the effect is very fine. In filling a bed with three colours in distinct zones, the two harmonising colours should be in the centre, and the contrasting colour as a margin. This principle of painting is particularly applicable to an isolated place, because the eye comprehends and grasps the design better with the soft colour in the centre than at the margin. With a strong colour for a centre, the eye is tyrannically attracted to the weight of heavy colouring. One of the most effective combinations of this mixed principle in one bed that I ever saw was the key-bed of a large design. The centre was of Bijou (variegated Pelargonium), with a zone of Golden Chain Pelargonium. So far this was harmony. Then there was a border 5 feet wide, all round the bed, of Gazania splendens and blue Lobelia mixed, and a fringe round all of Little David Pelargonium. At intervals of 8 feet, in the centre of the border of Gazania and Lobelia, were single plants of Centaurea ragusina. In this composition the variegated Pelargonium harmonised with the golden Pelargonium, the golden Pelargonium contrasted with the blue, and the fringe of scarlet harmonised with the orange, while the Centaurea contrasted with the blue, and was in harmony with the orange. There was a repose and beauty in this gigantic bed which required a practised eye to discover and appreciate, and it was exceedingly suitable as a key or centre bed, which should always be soft and quiet.—*Handy Book of the Flower Garden.*

[We reprint the above in answer to a correspondent seeking information on that subject. In the main it is right and calculated to be useful; but experiments and treatises long posterior to the remarks of Buffon have much more fully defined the nature of the primary, secondary, and tertiary colours and their complements. For instance, it has been proved that a *red* object casts a *green shadow*, and a *blue* object an *orange shadow;* green, therefore, is necessarily the natural complement and contrast to red, as orange is to blue, and so, on the same principle, with the secondary colours. Violet, for instance, is a *secondary* colour, as being a combination of blue with red, and requires for a contrast a mixture of the complementary colour to blue, which is orange, with the complementary colour to red, which is green; therefore the complementary or contrast colour to *violet* is *olive.* M. de Cherveuil, director of the manufacture of Gobelin tapestry, published a most complete, and in fact exhaustive, treatise on this subject in the year 1839. It was entitled "De la loi du contraste simultané des couleurs," and is illustrated, literally, by thousands of instructive diagrams. It is a work which ought to be in the hands of every scientific gardener when planning decorative effects in a flower garden.]

LEUCOPHYTA BROWNEI.

For bedding purposes, in future, I would strongly recommend this plant. As yet it is questionable if it has been recognised in that capacity; indeed, it is a plant of moderately recent introduction, and possibly not to be met with in many collections. Last summer, having two or three spare plants, I tried one planted out in the ordinary garden soil, and was surprised at the result as regards its freedom of growth, and also the abundant produce of its white wiry stems, which could be compared to nothing more appropriately than to a mass of filagree work of the loveliest frosted silver. Besides these recommendations, I may add the further one that no rain—of which, by the way, we have had a more than bountiful supply during the past autumn—appeared to tarnish its beauty; nay, rather, owing to the absence of the woolly character upon which so many of our white-leaved plants depend for their character, the result of a good shower of rain was but to render its silvery whiteness purer.

The special purpose in flower gardening to which this plant is peculiarly adapted is as an edging plant, especially for small sized beds, and I have an arrangement in my mind's eye which I hope to carry out next summer, namely, to margin round a bed in which a nice bank of the beautiful Muhlenbeckia complexa, now established for years, will form the background, whose dark brown stems and tiny maidenhair-like leaves will form an admirable contrast on the one hand, and a margin of the dense variety of the mossy Saxifrage, with its carpet of brightest green on the other. I shall be much surprised if my new friend the Leucophyta does not find a fitting home in which to display its beauty to advantage. I have had my eye upon this plant for several years, but found it very difficult to increase in any quantity, its nature, when grown in a pot, being somewhat hard and woody. This difficulty I have by my experimental plant fully surmounted, and possibly some of your readers who grow the plant would be glad to have the result of my experience.

Last autumn, in the early part of August, finding my *protegé* developing such vigorous growth, I took a number of the side branchlets off about 1½ inch long, with a bit of heel from the parent branch; for this operation I need scarcely add a sharp knife is indispensable. These cuttings were inserted in pots filled with peat and a good mixture of silver sand, moderately firmly pressed down and topped up with silver sand, inserting about two dozen in each pot. I then placed the pots in a little frame that I use for propagating such things as I like to keep under my own eye, placed on a tan bed that had done duty for some six months, but still retained a little heat, and of course that heat—little as it was—was regular and constant. The removal of the glasses for an hour or so every morning after the first week, and a slight shading for a short time longer, constituted all the further attention required, the result being so highly satisfactory that only three or four of the cuttings damped off. I have never succeeded yet in blooming the Leucophyta, nor has it yet been figured that I am aware of. It is a composite plant belonging to the same section as the Helichrysums.

Possibly some of your readers may have been more fortunate in this respect; if so, I for one would be glad to hear what its floral characteristics are. I would strongly advise those who possess the plant to try spring propagation, subject to the same *modus operandi* as I have given for autumn, and I think if the plant is only in vigorous growth the result will prove equally satisfactory. Jas. C. Niven.

Botanic Gardens, Hull.

Euphorbia amygdaloides.—This beautiful wood Spurge as an ornament to woodland scenery has very few equals. Being evergreen, it is useful all the year round, flourishing in moist and stiff soils where but few ornamental plants will prosper; mingling with Grasses and Ferns and flowering plants. It is of the easiest culture, and may be transplanted at any time during the winter months, and will flower well the following spring. I can recommend this plant with confidence, as one that will beautify and give variety to woods and the rougher parts of pleasure grounds generally. It sports into many beautiful variegated forms splashed and striped and evenly margined with white, cream, and yellow. These variegated forms are not easy to increase; they are suitable for a border of variegated hardy plants. I have an entirely yellow variety, and shall be curious to know if it will reproduce itself from seed; if so, it will be generally useful.—Wm. Elliott, *Beechmont, Sydenham.*

New British Variegated Grasses.—I observed during the past summer some fine new varieties of our native Grasses; one, I think, will be very interesting, as it is a tricolor—Brachypodium sylvaticum, variegated with pure white, yellow, and green. This Grass is well adapted for Ferneries. Brachypodium album variegatum is a curious form of this Grass, with a thin vein of white up the centre of each leaf, and the flower-stems are entirely white. Another good Grass is Anthoxanthemum odoratum aureum striatum; this makes a fine tuft, and will flourish in stiff and bad soils. Holcus mollis aureus will be useful, as it is a fine colour during the summer months, and good for rockery, wood, or wild garden. These three Grasses are all from Dulwich wood. I have others that are very interesting, such as two variegated forms of Luzula pilosa major, a Carex, another Holcus lanatus, and I think a Bromus sterilis.—Wm. Elliott, *The Gardens, Beechmont.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Chamæbatia foliolosa.—About ten years ago I saw a small plant of this on a gentleman's lawn, and it's exquisite foliage so charmed me that I at once resolved to add a specimen of it to my plant collection. I applied to many of our leading nurserymen in England for it, but could never succeed in obtaining a plant. The name occurs in many catalogues, but the reply to every enquiry made concerning it is the same, "regret we cannot supply it." How is this?—J. M. Hawkchurch, *Axminster.*

Primroses.—I have Primula altaica at present in bloom at Bedfont. It is of a pale mauve colour and is extremely pretty and effective. I have also a great variety of crimson shades among some seedling Primroses which I have raised, but nothing to touch P. vulgaris auriculæflora, blossoms of which I enclose. It is wonderfully floriferous, and on the bright sunny days of early spring very beautiful indeed.—Richard Dean, *Ealing.* [Along with this came a boxful of Primroses, varying in colour from mauve to crimson; but the best among them were decidedly those of vulgaris auriculæflora, each of which is larger than a shilling, and has a bright yellow eye, which sets off the rich velvety crimson of the rest of the flower to much advantage. It is a charming variety.]

Mildness of the Season in Anglesey.—It may interest some of your readers to hear what a mild climate this locality possesses. On Sunday I gathered a white Camellia from a tree in our garden, and some more since. This tree is 6 feet high, and about as many in diameter. It was planted out about fifteen years ago, and every year it is covered with blossoms. Last year I cut the first flower on the 26th January, and from that time till March, when they were blighted by the frost, I was able to cut many every day. On Christmas day I gathered a bouquet of Mignonette, Roses (tea Goubalt), scented Verbena, (Aloysia citriodora), and a Carnation, all from the open air. Many flowers are now in bloom, night-scented Stock being among them. The Calceolarias, Verbenas, and Geraniums which were left in the ground are all as fresh as possible.—Annie Owen, *Tregdrarth Rectory, Isle of Anglesey.*

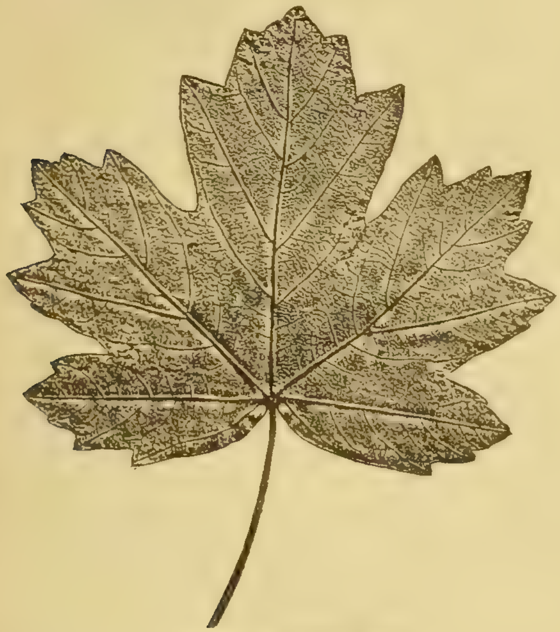
THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE SIBERIAN MAPLE (ACER LOBATUM).

This forms a small tree from 20 to 30 feet high, with a somewhat dense rounded head, amply furnished with lateral branchlets thickly garnished with tufted leaves, and when leafless with downy buds. It is a native of Asiatic Russia, on the Ural and Caucasian mountains, and in the wooded regions of Tobolsk, in western Siberia. It was first introduced in 1838. The leaves are somewhat small rounded in outline, slightly cordate at the base, and five lobed, with the divisions open and moderately deep. They are leathery in texture, bright green above, pallid beneath, smooth on both surfaces, and set on long footstalks, which are frequently of a deep red colour. The lobes are rather broad and toothed on the edges, with the three outer ones equal in size, semi-lobed, and the largest. The flowers are in drooping corymbs, yellowish-white, and produced in May. The fruit or keys are rather small and smooth, with thick carpels furnished with rather broad wings slightly spreading. The Siberian Maple forms a nice small tree for planting singly on the lawn, on account of its slow growth and neat appearance. The leaves before they fall off in the autumn turn to a beautiful bright yellow tinted on the upper side with red. It is sometimes named Acer caucasicum in the nurseries. Length of a full-sized leaf, 5 inches, including the footstalk, which is frequently from 2½ to 3 inches long; breadth of leaf, 3 inches.



A. lobatum (a full-sized leaf).

ABIES DOUGLASII AS A FOREST TREE.

A very fine specimen of this Fir may be seen growing in the grounds at Hackwood Park, Basingstoke, and, owing to its quick growth, this Fir would doubtless make a valuable forest tree, especially as it can now be procured in quantities at a cheap rate. The tree in question has been planted, as near as I can ascertain, about forty-five years. It is now over 90 feet high, and more than 10 feet in circumference at 3 feet from the ground, and it has a spread of branches 50 feet in diameter on the surface of the ground. It is growing on a strong hazelly loam, in which Rhododendrons, and in fact nearly all sorts of shrubs do well. Near it are growing some very fine Silver and Spruce Firs, some of the former being over 100 feet in height, and 10 feet in circumference above the ground level, and one specimen of the latter is the same height, and 16 feet in circumference, at 4 feet from the ground. During the time I had charge of the place, viz., six and half years, the Douglas Fir increased 16 inches in the circumference of the bole. There is a pale-green foliaged Douglas Fir in commerce, but the true sound sort has very glaucous leaves. Whether the green kind is the produce of weak, unsound, home-grown seed or not, I am not in a position to say, but I would caution intending planters of this tree on a large scale to be careful to procure the glaucous-leaved variety, to plant it in good sound loamy soils, and not in exposed situations. Under such conditions the probability will be that it will prove a useful tree for forest purposes, and also have the additional recommendation of being a handsome tree in reference to landscape effect. It will not succeed, however, except it be planted in good loamy soil. I say this advisedly, for when I planted it on thin soil near the chalk, its progress was not satisfactory. Mr. Barron, of Elvaston, who strongly recommends the Douglas Fir as a useful tree for forest planting, says that the timber is equal to that of Pitch Pine.—H. C. G.

CONIFER HEDGES.

In reply to the query of "J. H. W. T." viz., "Which of all the Conifers would in five years make the best hedge as regards graceful habit, colour, and denseness?" I can, from experience, give my opinion in favour of the Abies excelsa, or Norway Spruce. The gracefulness of its habit may perhaps be doubted, but in brightness of colour and denseness it can hardly be surpassed. I have seen it much used in France, Bavaria, and Austria, as garden hedges, screens, and railway fences. To ensure the success of a Spruce hedge, care should be taken to select thriving plants that have been several times transplanted, say 2 feet high, having well-preserved branches at the base of the stem, and planted in a double row on well-trenched soil. In the annual pruning or trimming of the young plants it is requisite that the top of the hedge be left narrower than the base, for an even admission of light; neglect of this particular invariably checks and eventually destroys the under branch growth—an irremediable evil in the case of all evergreen Conifers. I should say that five years is too short a period in which to expect the full growth and perfection of any Conifer hedge. E. D. T.

Welfield.

A Mistletoe Mystery.—Three times in one week a lady asked me if I had heard the tradition that the Druids cursed Devonshire, and forbade their sacred plant to grow there. Once I answered "No;" twice just as truthfully "Yes." Lest any of your readers should be as ignorant as I was in the first instance, I hasten to assure them that the Devonians believe this to be a fact; and that a friend of my informant having orchard ground in Somersetshire and Devonshire, the two portions being divided merely by a deep ditch, has tried in vain to propagate the parasite on his trees in the county under Druidic ban, whilst it grows in almost troublesome profusion on those just over the border."—St. Swithin, *in Notes and Queries.* [Mr. Barnes says in reference to this matter that when at Bicton he never succeeded in getting Mistletoe to grow from seeds, which, on several occasions, he rubbed into the chinks of the bark of Apple trees, and he adds that he never saw Mistletoe grow on any tree in Devonshire, although he has heard that it does grow somewhere in that county.]

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Euonymus radicans.—Like Ivy, this is an excellent plant for attaching itself to walls and hiding them; and like Ivy it will thrive in the shade. It can also be employed for covering the earth, where little else will grow.

Sambucus racemosa spectabilis.—This is one of the prettiest of shrubs, and one which is extremely hardy. It grows to a good height, and in April becomes covered with innumerable clusters of white flowers, which are slightly sweet-scented. It is highly recommended as an ornamental shrub by M. Carriere.

Road-side Trees and Telegraph Wires.—Mr. Brewin, Culland Hall, Derby, has requested us to say that if the gentleman alluded to in a communication under this head in one of our recent numbers will communicate with him, he thinks he can procure for him information that may be valuable as regards the serious and unjustifiable injury which the Telegraph Company appear to have inflicted on his property.

Pruning Conifers.—Mr. McNab recently read a paper "On the effects produced by stem-pruning small plants of the Nidpath Castle Yew," at a meeting of the Royal Botanic Society of Edinburgh. Stem-pruning of plants of this variety of Yew continued for several years after they were struck from cuttings, induced them to become infinitely more graceful than either the Irish or the unpruned Nidpath Castle Yews.

New Ornamental Cherry.—It may interest your readers to know that a precisely similar sport to that described in the *Belgique Horticole*, and quoted in "The Garden" (p. 5), has occurred in this neighbourhood. When at Selby last autumn I saw in the garden of Messrs. Smith and Son one year's shoots of a cherry with leaves such as are described, whilst other leaves from the same bud had the ordinary character of those of the parent tree, from which it had been taken. A more striking sport or deviation from the normal type I do not remember to have seen.—J. S. Gray, *York.*

VEGETATION IN CENTRAL AFRICA.

The spirited dash made into the depths of unexplored Africa by Mr. Stanley in his search after Livingstone, has clearly shown to the world that the central and hitherto mysterious regions of that vast continent are by no means so inaccessible as has been thought. He has, indeed, proved that with moderate prudence, a tolerable constitution, and an escort, comparatively unarmed, consisting chiefly of porters to carry a supply of provisions, with cloth and beads to barter for necessaries, any man may penetrate to the great lake district, either with the views of a sportsman in pursuit of "big game," a trader seeking to share in the lucrative traffic in ivory, or a man of science in search of knowledge. Here, indeed, is new ground for the exploring botanist; a new field of discovery, in which he may reap a splendid harvest of novelty and beauty. The hasty glimpses of recent travellers, especially Stanley, have made known new mountain ranges, the flanks of which, at different elevations, may prove as fertile in splendid additions to our gardens, shrubberies, and woodlands as those which have quite recently become known to us for the first time from the grand botanical regions of the Himalayas.

Mr. Stanley's snatches of broad, general description of the forest and jungle scenery which he passed through are often very spirited, and present us with touches of great graphic power. In the district of Mwapa, for instance, he noticed "precipitous scarps where clung the Kolquall with a sure hold, drawing nourishment where every other green thing failed; and clad in others with hardy Mimosas, which rose like a back of verdure almost to the summit." There were, as he tells us, "mountain vales, containing deep recesses which might charm a hermit's soul; and awful ravines where reigned a twilight gloom, or fractured and riven precipices," which produce the deepest impression on the traveller. In another place he describes luxuriant forest hollows where the giant Baobab and the great African Sycamore mingle with Palm and Plantain in matted rankness, and where the rhinoceros and many other kinds of "big game," undisturbed by hunters, fearlessly approach within a short distance of his camp, presenting just such a scene as that exhibited in the accompanying engraving. When an elevated position could be reached, the view over the forest tops is thus described :—" An illimitable forest stretches in grand waves far beyond the ken of vision. Ridges, forest-clad, one above another, until they recede into the dim purple-blue distance, with a warm haze floating above them, which, though clear enough in our immediate neighbourhood, became impenetrably blue in the far distance. Woods, woods, woods—leafy branches, foliaged globes, or parachutes—green, brown, or sere in colour, forests one above another, rising, falling, and receding—a very leafy ocean." And then, comparing small things with great, he exclaims that, although the grove of the Central Park, New York, is grand compared with the thin groves seen in other cities, and Windsor Forest and the New Forest are noble, as compared with other forests in England, they are yet but "faggots of sticks," compared with the eternal forests of Unyamwezi.

Mr. Stanley puts forth no pretensions to accurate scientific knowledge of natural history, in any of its branches; but with the quick perception of a man of genius his attention was caught at once by any striking novelty which he met with. General scenery, endless varieties of quadrupeds, birds, fishes, insects, and plants; everything that fell in his way received some hasty notice in his journal, regularly kept up despite all difficulties, and the rapidity of the hasty push forward, necessitated by the nature of his enterprise, which was not one of scientific research. He found time for furnishing us with the following summary, in brief, of some of the great forest trees, shrubs, and other plants which he observed in the great lake region. Taken altogether, he says, Unyamwezi may be said to be the finest country in the whole of East and Central Africa; it is one grand rolling table-land, with a gentle western trend towards Lake Tanganika, which drains the greater part of it. He then gives just such a graphic account of the precise nature of the scenery as would delight a landscape painter, and make him long to transfer such models to his canvas. His remarks on the different hues of the foliage, from the tenderest greens verging on white, to the deepest purple, though without definition as to individual plants, are more than sufficient, vague as they are, to raise the brightest dreams of brilliant discoveries in the imagination of the botanist. He then proceeds to describe, in slight detail, a few items of this glorious vegetation. The most gigantic tree in the region of the Tanganika appears to be the Mtamba, a species of Sycamore, which is equal in size to the gigantic Baobabs of Ugogo and other parts of Africa. It bears a Fig-like fruit, much esteemed by the natives, and which is of pleasant flavour. There are many other trees of great grandeur of growth, among which are those the natives name Mtunda, Miombo, Mkora, Mkurongo, Mbembu, Mvule, Msundurusi, Mninga, Mbugu, Matonga, and Mbite. The last-named, the Mbite, furnishes timber as beautiful and as sweet as Cedar; it is marked with red and yellow veinings, and is used ornamentally by the natives in their better kind of structures. The Mkora is a large tree of very stately proportions, the wood of which is durable and handsome; the stools of chiefs, often richly carved, are formed of it, as also the huge mortars in which the Sorghum grain is pounded into flour. The Mkurongo, another grand tree, furnishes the wood from which the great pestles for pounding the grain are made. It is harder and more durable than Hickory, and when polished has a whitish and glistening appearance, like a metal. The Mbugu, a very ornamental tree, furnishes a soft, fibrous bark, from which rope, coarse cloth, and light boxes are made. The inhabitants on the banks of the Rufigi also construct small canoes with it; but it is from the grand Mvule tree that the lake tribes construct their largest canoes, often above 60 feet long. This enormous tree attains its greatest size among the mountain ravines of Ugoma. Among the other remarkable trees of the great lake forests are the Kolquall, or candelabra tree, a fragrant Mimosa, the Guinea Palm, called Mchikichi, and the Plantain tree. The Cactaceous and Aloetic plants are found all over the country, and doubtless many new and beautiful kinds of these favourite families of plants would reward the researches of the adventurous explorer. The Tamarisk trees attain great size to the west of Unyanyembe, and many kinds of Tamarind and Acacia appear to be well worthy of notice, as exhibiting many striking varieties.

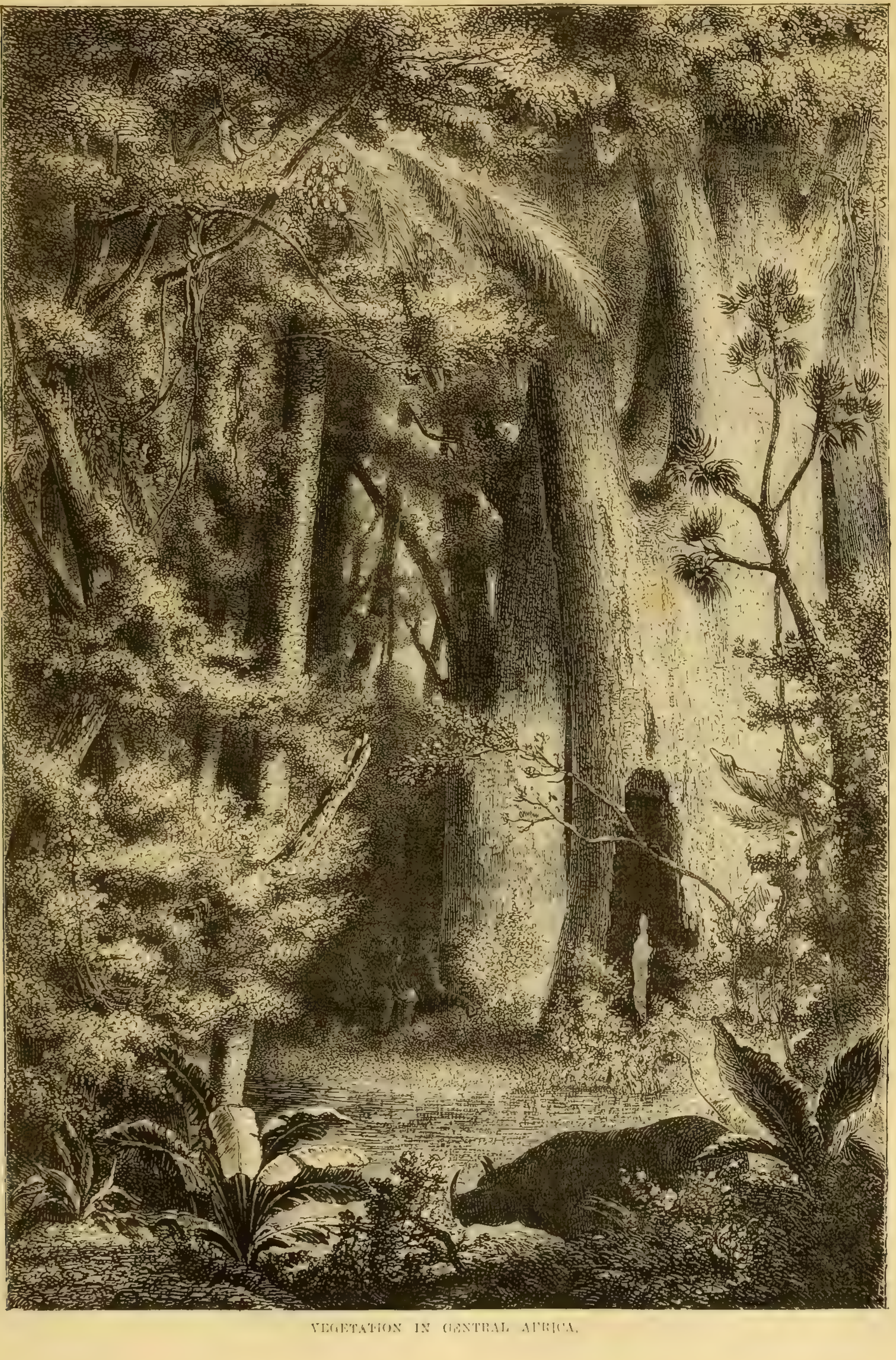
Among fruit-bearing trees, the Imbembu or Wood Peach appears to be one of the most interesting; and the fruit, under culture, might become a very delicious novelty. There is also the Singwe or Wood Plum and the Mtgowe or Wood Apple. In Ukawendi there are many kinds of Grapes, some of which promise to reward the careful cultivator. Many of these African fruit trees, if not always amenable to European culture, with profitable results in themselves, might possibly be extremely valuable for hybridising, and imparting new vigour and distinct characteristics to some of our old and, in occasional cases, nearly worn-out strains. Many of the African fruit-bearing trees have, it appears, been brought into a kind of garden cultivation by a colony of Arabs at Unyanyembe, who have also been very successful in the culture of the Orange, the Citron, the Lime, the Papaw, the Guava, the Pomegranate, the Mango, and the Banana. Large kinds of field and garden Beans are in common culture among the natives, as well as Rice, but wheat is only grown by the Arabs. Sweet Potatoes, Yams, and Manioc are abundant, and the sugar-cane flourishes at Ujiji. The harvests of the region take place once a year, in April, May, and June, according to the elevations of the districts. Cotton, tobacco, the Castor-oil plant, sweet Gourds, and Cucumbers are also plentiful. Among the lesser shrubs and plants Mr. Stanley notices indiscriminately the wild Thyme, a dwarf Holly, the Sunflower, several Poppies, Bird Pepper, Chilies, Ginger, Turmeric, wild Mustard, and the Curry plant.

In the forests bordering the great lake it would seem that a magnificent harvest of beautiful and highly-desirable shrubs might be collected. Mr. Stanley speaks enthusiastically of hundreds of kinds bearing beautiful flowers, which exhale an exquisite fragrance. Among water plants we are told of the Lotus, the leafless Lily, several kinds of Papyrus, the Matile Cane, and the marsh-growing Pith tree.

Looking at this list as the random jottings of a traveller whose observations were the result of partial glimpses snatched at intervals during a rapid and continuous journey towards a special goal, it surely affords most tempting indications of botanical riches which are waiting in their beauty as prizes for the first enterprising explorer. That many of the plants might prove suitable to a temperate climate is plainly suggested by the existence of the wild Thyme on the hill-sides, by the culture of wheat as well as rice in the plains, and by the fact that many of the trees, shrubs, and herbaceous plants alluded to are found at considerable elevations in the mountain ranges. Why do not one or more of our enterprising and wealthy nurserymen send out a collector at once? The surface of our planet is getting rapidly ransacked; but there is, as yet, a grand opportunity of acquiring something new, something worth while, in the alpine regions of central Africa, and it is now shown that for the outlay of £1,000 a collector might be sent to the glorious shores of Tanganika. For that comparatively small sum he might both go and return; bringing back with him such a harvest of botanical novelty as would yield enormous profits, if profit alone were sought.

H. N. H.

The Struggle for Life among Plants.—Each plant endeavours, almost consciously, to destroy his neighbour, to occupy his ground, to feed upon his nutriment, to devour his substance. There are armies and invasions of Grasses, barbarian inroads and extirpations. Every inch of ground is contested by the weeds; the forest is a struggle for precedence; the wars of the Roses are a perennial feud. The severest landscape, the stillest woodland, are the mortal arena of vegetable and animal conflict.



VEGETATION IN CENTRAL AFRICA.

THE PROPAGATOR.

ON GRAFTING AND BUDDING.

BY A. MURRAY.

THE drawings and woodcuts which are given of the process of grafting, by the most eminent writers on the subject, almost always convey an erroneous impression on the very point on which success entirely depends. The woodcuts of the slips and grafts prepared for adhesion turn the attention more to an equality of dimension, and to a correct fitting of the outside of the bark of the one to the outside of the bark of the other, than to an exact apposition of cambium of the one to that of the other, on which, in point of fact, adhesion and grafting absolutely and solely depend. Most people know that in all instances of transfusing a part of one plant into that of another, whether by grafting, or budding, or any other mode, the only point at which transfusion or union can take place is the outer circle of vessels which lies between the bark and the wood, in which the passage of the sap alone takes place, and by which the connection between the roots and the leaves, and the consequent deposit of wood and growth of the tree, take place. I am afraid, however, that the more general impression is that a branch grafted on to another is united to the stock on which it is grafted throughout its whole surface, that it grows together as two parts of an animal body united by the first intention do, as, for example, part of a finger cut off and immediately clapped on again. The examination of sections of old grafts will serve to correct any such misapprehension. They show that there is no union whatever at any part of the wood of the scion applied to the wood of the stock, except solely at the outer ring of the alburnum, already mentioned; indeed a small film of a brownish substance is deposited along every part of the applied surfaces, except the outer ring, where the union takes place; and some specimens of sections of grafts show isolated deposits of wood and woody fibre enveloped in this brown deposit, which I imagine to be oozings of woody matter something analagous to what is called proud flesh in the animal body. What I wish, however, particularly to point out is that in every instance the inner part of the applied surfaces where the union has not taken place, both of the scion and the stock, is in a more or less advanced state of decay. In no instance is this absent, it is an inherent necessity in the very process of grafting that the seeds of decay be shut up along with it. In fact one inevitable ingredient in the manufacture of grafts, concomitant, coexistent, and inseparable from it, is the simultaneous manufacture of an ulcer in its heart. Exactly the same thing takes place in budding, although on a smaller scale—the larger the extent of the cut surfaces applied to each other the greater being the extent of future decay; and of course in budding this space is small in comparison with that in grafting; and of course, too, the smaller the amount of exposed surface or cut wood the less will be the amount of ulcer or decay subsequently manifested in the heart of the branch. I was about to say that the smaller the amount of this surface, the greater would be the skill of the operator; but this would imply that the decay in the heart of the branch was injurious to the plant, and was, if possible, to be avoided; and I am not sure that we are to take this for granted. Of course, if we want a perfect tree complete of its kind, doing all its functions in the best manner for itself and the general purpose it is to serve in organic nature, we must say that it would be better without the decay in the heart of the graft, and that that decay must be looked upon as a blemish; but that is not what we want in every case of grafting. In fruit trees we do not want a normal amount of fruit; we want an excessive amount. In Rose trees our demand for flowers is not limited to Nature's natural bounty; like Oliver, we come back for more, not once, but many times. Now it is well known that one of the surest means of inducing an excessive production of flower and fruit, is to weaken the vitality of the plant. It is no uncommon thing to hear people say that a plant had killed itself by its excessive flourish the previous year, whereas it was not the flourish that killed it, but the plant, knowing that it was going to die, made a desperate effort to propagate its species before its life was extinct. Now, if the implanting of decay in the heart of a tree is injurious to the health of that tree, it may have the effect of inducing something of this excessive effort at propagation. I have heard it said that grafted trees always bear better than ungrafted; but as to that we have plenty of practical men who can speak with authority. It is to be observed, too, that the decay of which I speak is limited in its extent and slow in its progress. It is shut up and almost hermetically sealed in by the deposits of wood which have taken place subsequently to the union of the graft; and although I have called it an ulcer, it is only so in the sense of being a source of decay; there is no active or malignant principle at work; it is merely the gradual decay of a perishable body which is situated in the heart of the timber.

It may be asked, too, whether this decay in the heart really does any damage other than weakening the branch or stem at the point where it exists; for it cannot be disputed that to that extent at least it must be injurious. Is the heart of the stem of a tree of any use to it except for the support and solidity which it gives it? We see old piped trees flourishing away after all the heart is gone, and nothing left but a thin rind. True, the flourishing is not so vigorous as in a younger and more solid tree. No great sturdy arms are thrown out, and the foliage is limited to a few clustered, scrubby twigs. But it does not follow that this weakness of growth is due to the tree being piped. In such cases, we must remember, that tree has generally been growing in the same ground for perhaps hundreds of years, exhausting all the ingredients of the soil which are suitable for elaboration into its sap and fibre—and that if we remove the tree and plant another of the same kind in its place, it grows no better than the old one, seeming to show, at all events, that it is not the mere absence of pith and heart-wood in the old tree which has caused the declension in its vigour of growth.

The principles of physiology, therefore, would rather seem to say that in all those cases (such as fruit-trees, Roses, &c.) where the acquisition of solid timber (whether for the support of the tree or for the uses of man) is not the principal object, grafting, although attended by decay, is not attended with consequences injurious to the purposes for which the tree is cultivated. But where timber is the object, as in forest trees, the case is different. The decay imbedded at the base of the stem gives an element of weakness to the tree at the very point where the leverage of the wind is strongest, and exposes it to be snapped off at the root. I do not think it can be said to be injurious to the growth of the timber in other respects; for immediately above the graft the timber is deposited in a solid and continuous stream; and I see no reason why the tree in all other respects should not be as good as an unworked plant. Still we have a prejudice in favour of seedling trees; and I think that the liability of grafted plants to breakage from wind is quite a sufficient reason why we should continue to retain it.—*Journ. Roy. Hort. Soc.* 1873.

Mistletoe.—A few years (four or five) ago a man in the village where I reside put some berries on my trees, and in nearly every instance they grew. He merely squeezed the inside free from the skin on to the young bark of Apple and other trees. They of course adhered of their own accord. The spring was fairly wet, but the summer was dry, and some of the young shoots died off. I have now large plants in the case of those which were not killed off. Each year I tried other berries; but, owing to dry summers, the shoots died off. Last spring and summer were wet, and I have now every shoot living, and the trees in a few years will be covered with Mistletoe.—*Charles Bamford.*

Experiments in Grafting.—The *Prairie Farmer* has published in detail the experiments made at the Illinois Industrial University, on root grafting the Apple. The results are—1. That grafts set on the first cut of the root or collar are more apt to live than those on lower cuts of the root, although the difference was not striking. 2. That the first or lower cut of the scion is more apt to live than those taken higher up. 3. That the terminal bud did not succeed so often as other grafts, but generally made a longer growth. 4. That when cuts of the roots four or five inches long were used, they lived oftener than 2½ inch cuts, and more than twice as many grew as when the cuts of the root were an inch and a half long. Single experiments like these, however, need repeating several times in different years, and under varying circumstances, to be trustworthy.

THE LANGUAGE OF FLOWERS.

"TEACH thee their language? Sweet, I know no tongue,
No mystic art those gentle things declare;
I ne'er could trace the schoolman's trick among
Created things so delicate and rare.
Their language? Prithee! why, they are themselves
But bright thoughts syllabled to shape and hue,—
The tongue that erst was spoken by the elves,
When tenderness as yet within the world was new.

"And, oh! do not their soft and starry eyes—
Now bent to earth, to heaven now meekly pleading,
Their incense fainting as it seeks the skies,
Yet still from earth with freshening hope receding—
Say, do not these to every heart declare,
With all the silent eloquence of truth,
The language that they speak is Nature's prayer,
To give her back those spotless days of youth?"

A Turkish Crystal Palace.—The late Sultan, wishing to give an idea of the Crystal Palace at Sydenham, commissioned a firm to construct the iron framework of a huge dome-like structure. It was, when completed, put up in England, and then taken to pieces for conveyance to Constantinople, where it was re-erected and covered in with glass, and formed one of the most conspicuous and pretty objects which met the traveller's gaze on going up the Bosphorus. The present Sultan, however, thought that it interfered with his view, and ordered it to be demolished, and the debris of a building which from first to last must have cost more than £100,000, has been sold for old iron.

THE BEAUTY OF BARE BRANCHES.

The matchless sculptors of Greece—though the national Chlamys, pallium, and peplum were, perhaps, the most graceful forms of drapery ever devised for the clothing of the human body—considered that both man and woman, made in God's image, were, "when unadorned, adorned the most," and the masterpieces of their art, which they have bequeathed to us, seem to leave but little doubt that they were right. May we not, to some extent, adapt the Greek theory of beauty to our deciduous trees, when they let fall their summer mantle of green, and stand confessed in the naked beauty of their wondrous elegance of forms, spreading themselves forth in a thousand varying ramifications, each more wonderful and graceful than the other. We need but to cast a single glance at the elegant dismantled Lime, engraved below, to be convinced of the greatness of tree beauty as it appears, unclothed, in winter. There is in the Lime a graceful drooping of the lesser branchlets, like slender fingers to the thousand hands of some delicately-formed Briareus, which is irresistibly attractive. In fact, the Lime is so beautiful when undraped that I have often felt a certain sense of regret when spring, with her train of tiring maids, has arrived in early April to introduce the vernal fashion of mantlery first of all to the exquisitely graceful Lime. The bare-branched Oak displays another kind of beauty. Great brawny limbs spread themselves forth from the majestic trunk in daring grandeur and robust power, reaching straight out to incredible distances; each great branch supporting masses of gnarly ramifications big enough to form a separate tree. Next in stately grandeur comes the Elm, little inferior in majesty to the Oak. Then follows the Ash, with branches of pearl grey; and then the feathery Birch, the cynosure of elegance, with silvery skin, that glistens in the rays of the winter sun with a semi-metallic lustre; and how many others of our noble deciduous trees might be mentioned, as equally beautiful?

The Lime Tree in Winter.

In strong and massive contrast to the nude leaf-shedding trees, we have, during the winter months, the dark green masses of the Pine tribes, which, in the absence of more vivid greens, display their sombre tones of dark olive to great advantage.

There is the great Mountain Fir, for instance (see p. 75), which, with its massive trunk, often made conspicuous by a hoary clothing of Lichen, which droops from its horizontal branches like a venerable beard, groups well with the trees whose bare trunks and branches are unsupported by a thick background of green. With this, too, the foliage-shedding Larch forms an interesting contrast, forming a link between the evergreen Pines and the deciduous trees of ordinary character. We should have in our gardens only a monotonous kind of enjoyment if we were sentenced to perpetual summer. It is a great relief to be freed for a time from a surfeit of floral splendour, and the continual prevalence of rich perfumes, such as those which Rose and Woodbine, and Jasmine, and a hundred other sweet-breathed flowers exhale. The prevalence for a time of bare branches and keen breezes is not only delightful as a contrast to continued banqueting on gorgeous colour and luscious sweets, but the aspects of the time are beautiful in themselves; and the bracing winds of winter which accompany them prepare us, like a tonic, for another course of summer beauty. The winters in the south of Europe, where vegetation wears very much the same aspect all the year round, present no such changes to vary the successive aspects of the year; and consequently, the coming of spring is not hailed with anything like the zest which it inspires in our own climate, where we set to work as soon as the first green, and the earliest flowers appear, to wreath fresh garlands and to weave new bowers—

> With twice the ecstasy
> of one
> Who has no wintry
> season known.

H. N. H.

The Rainfall of 1872 at Cheltenham.—My house stands on the west side of a down, a spur of the Cotswold Hills, about 215 feet above the lowest part of the valley in which Cheltenham stands with a north-west exposure. Here the total rainfall of the year has been 38.60 inches. The months in which the greatest fall occurred were January 4.60 inches, October 3.95, November 4.77, December 3.49. The days on which the largest falls were registered were 4th January, night, .73 inch; 23rd January, .83 inch; 25th July, 1.38 inch, all of which fell in a thunderstorm; 30th July, .81 inch, in the course of two or three hours; 7th August, 1.23 inch, with heavy thunder and lightning; 23rd November, .83 inch; 17th December, .81 inch; 25th December, .45 inch, fell in an hour, 10-15 a.m. to 11-15 a.m. I have only kept a register of the thermometer for the last four months. 13th October, night temperature, minimum, 29° Fahrenheit; 14th October, ditto, 27°; 5th December, ditto, 26°; 28th December, ditto, 46°; 29th December, ditto, 42°. In some of the nights, when the temperature was so high, that of the day was sometimes even lower, and never more than 2° higher. The wind on the night of the 31st December was south, thereby indicating, according to the ancient legends of northern nations, that we shall have "much warmth and growth."—K.

Weight of the Late Rainfall.—It is estimated that the fall in England last year amounts to 50,000,000,000 tons. We now can see what a powerful agent water must be in a geological point of view.

THE FRUIT GARDEN.

FORCING THE PEACH.

The Peach is a more critical subject to deal with than the Vine, particularly in early forcing. A Vine, if it is at all in an ordinarily healthy state, may be reckoned upon almost constantly to produce fruit; but with the Peach, failure, when it does occur, is often complete. It is not forced early so much as the Vine, however, and this, together with the fact that it has not been written so much about, accounts, I think, for the failures that often happen with early crops. It is perfectly practicable to secure a crop of fruit the second year after planting, even though we begin with young trees, which is not always necessary when trees six or seven years of age can be procured. The construction of the house for early work is a chief consideration. I know many very imposing structures for forcing the Peach and Vine which are anything but adapted to the end in view—dead walls 3 or 4 feet high in front, and the roof pitched at an angle which would lead one to suppose the designer imagined the sun to be nearly over his head in December and January. The Peach house here is not a pretentious structure, but it is well set to its work, being a lean-to, thrown against a south wall pretty nearly at an angle of 45°, and so low in front that the trees, which are all trained under the glass at the same angle, get the sun down to their lowest branches, and not an inch of space is lost. The permanent trees are planted in front, roots outside and inside, and the branches have of course an area nearly equal to the roof in superficial extent to extend themselves. This is a better plan in every way than having a trellis only half-way up the glass in front, in order that the top half of the back wall may be covered with riders. In the first place, by the latter plan neither the front trees nor the back ones have half the room they require to extend themselves, and in a few years give infinite trouble to keep them within bounds and get fruit at the same time, especially the front trees. The riders at the back very often don't thrive well—they do not lie at a favourable angle to the glass; and, if the house is used for storing purposes during the winter, the roots get sodden and wet, unavoidably, and the result is altogether unsatisfactory.

A Peach tree, if allowed to extend itself, as it should be, would probably cover 400 square feet in seven or eight years, or less. It is therefore evident how utterly absurd the practice is of cramping such a vigorous-growing tree into a space 8 feet or 10 feet square, as it often is, in houses which are planted back and front. But by covering the inside of the roof with a wire trellis, a foot or rather more from the glass, planting the trees in front, and giving them the whole of the space to run over, all these evils are avoided, and the back wall during the spring months may be utilised for growing Strawberries or anything else upon. I need hardly say that ample ventilation should be provided, back and front, and arrangements should also be made for removing the lights after midsummer, so that the trees may be exposed to the weather till November. This is a very important matter. If young trees are planted, those which are intended to be the permanent ones should be planted in front, 20 feet apart (if that space can be afforded), selecting such varieties as will give a succession of fruit, and the spaces between should be filled up with supernumeraries (one in each space, perhaps), which will leave a space 10 feet wide for each tree. This being done, a row of riders should be planted along the middle of the house, the same distance apart, and so as just to catch the trellis about half way up the roof. It will be understood, I hope, that the whole of these riders, together with the supernumeraries in front, are intended to be cut away as the permanent trees overtake them, and eventually to be removed altogether. Vigorous young trees planted in this way, started in February, will generally be from 6 feet to 8 feet across at the end of the first season, and furnished with bearing wood, which should be hard and ripe by August or September, if all has gone well. By November the leaves will have fallen off the trees, and they should then be gone over and the wood thinned out where too thick. All the old ties should also be cut and removed, and the branches, which should always be trained above the wires, ought to be set perfectly free, and allowed to lie untied until the fruit is stoned. Some may think this is a trifling matter. I can only say that from careful observation and experiment I have become impressed with the conviction that it is a point of much importance. I find that Peaches and shy-setting varieties of Grapes set a great deal better if left free until the fruit is set, and for this reason I tie neither Peaches nor Muscat Vines until after this period. Tied tightly and stiffly to a wire is not a favourable position for the shoots to be in at the critical setting period. Fruit growers generally find that nailing in the shoots of wall trees, or tying in those of cordons tightly, as they progress, hinders their growth; and it is quite as likely that the setting of the fruit may be injured by the same means. That it is so I have myself no doubt.

Having washed the house down, the trees may be started the second season about the beginning of January, at a temperature of 45° by night in mild weather, which may be pushed up to 55° by fire heat on dull days, and to 75° with sunshine and air, to subside at night, however, when this is reached, to 40° or 35°. When the trees come into bloom in February, the night temperature may range from 50° to 55° in mild weather, and from 60° to 65° on dull days by fire-heat; while, if the weather is frosty and the days sunny, it should run up to 75° or 80° at noon, always with a moderate admission of air, back and front, and fall at night to 40° or 45°. On fine days the trees should be dewed liberally overhead all the time they are in bloom, as well as at other times, with clear, soft, tepid water, about three or four o'clock in the afternoon. This restores the flagging energy of the flowers after a dry sunny day, aggravated by the hot pipes within the house, distributes the pollen more effectually than it can be in any other way, and is one of the greatest aids to a good "set" of fruit that I know of. That quite the contrary is the practice with many growers, I am aware. This has been my plan, however, for years, and the fruit sets always so thickly as to be quite troublesome to thin. But the dewing is only recommended when the above temperatures are maintained, which are from 5° to 10° higher than is generally advised. If the weather is dull for days at a time, a dewing once or twice a week will be sufficient. After the fruit is set another 5° may be added to the night and day temperature, and by this time disbudding will have to be attended to regularly. Rub the buds off gradually wherever they are pushing strongest, removing the fore-right shoots entirely, and such as are otherwise badly placed, but only pinching the heart out of those buds whose fruit is set, leaving one or two good leaves until the fruit is thinned or drops off. Thinning is commenced as soon as the fruit is about the size of a Pea, by removing all the smallest, and reducing the clusters of twos and threes to one. Before they begin stoning, they are thinned again to 3 inches or 4 inches apart on each shoot, and after stoning to about 9 inches, often less with Nectarines, though a foot is better when very large fruit is desired. After the fruit is stoned it swells fast, and the night temperature may be raised to from 65° to 70° at night, and to 85° or 90° with sun-heat; but it is safer to let it run up to 95° or 100° than admit heavy draughts of cold air, which are ruinous, and to compensate for the extra excitement by letting the thermometer sink to 50° or 55° at night. It is, however, important, at this stage particularly, that air be admitted, and in as great abundance as may be safe, in order to give colour and flavour to the fruit. Syringing should be discontinued as the fruit begins to ripen, but the trees must not be allowed, at this or any other period of their growth, to get dry at the root. In training, the chief thing is to see that every shoot has room, that every leaf is exposed to the light, and that the trees are allowed to grow without stint. If these directions are carried out, wood strong but not gross, and fruit buds plump and well developed, will be the result by June and July, when the fruit will be getting ripe generally. When it is seen that the fruit is about changing to the ripe state, the temperature should be reduced gradually, and when the fruit is gathered the lights should be removed off the house altogether, and turned to account in some other way till they are wanted again in November.

This completes the second year, by which time the trees will have covered a large surface. The third year the house may be started in December, just by shutting up the house and making the most of the sun-heat during the day, but no fire-heat should be applied till January, from which time the directions for the second year should be followed. But before concluding, just one word about airing, as it is understood. There is often much mischief done by the keen winds of March and April, and too much caution cannot be exercised at such times in opening the ventilators. To reduce the necessity of admitting too much air, therefore, an eye should be kept on the weather. If it is likely to be sunny or bright, the fire should be let down, in fact, pulled out at once, to cool the pipes, and the temperature allowed to go up above the usual figure, if it cannot be kept down without admitting great gusts of cold air. The house should also be shut up as early as possible, and syringed, and the temperature at night allowed to subside proportionately low. A high night temperature after a hot day cannot be justified on any grounds whatever in the early stages of forcing. J. S. W.

RAISING VINES FROM EYES.

Within these last two or three years this subject has been freely discussed in different horticultural periodicals, and by some of our most distinguished Grape growers; and I would refer more particularly to the articles written in the *Gardener* for January and February, 1871, by Mr. Wm. Thomson (part of which appeared in The Garden, p. 21), in which that veteran cultivator describes the system adopted by him with such successful results in raising the great quantities of Vines required to stock his vineries at Clovenfords. Having three vineries to plant last spring, I resolved to raise my own Vines and to try a modification of what I will term the Thomson or Simpson system, without the aid of pots. In the beginning of February we procured as many pieces of fresh turf as we thought would be required, cut about 8 inches square and 3 inches thick; the centres were scooped out and filled up with fine soil; in the middle of each a Vine eye was inserted surrounded with silver sand. In one of the vineries to be planted, we erected a temporary bed of tan on which the pieces of turf containing the Vine eyes were placed. After they had grown a few inches they were all moved, placed further apart, and set on slates, partly to prevent the roots from running down into the heating material, and partly to facilitate the removal of the Vines when wanted to be planted. When returned to their old quarters the spaces between the pieces of turf were filled up with fine soil, and a slight top-dressing was put over the whole. Into this the Vines rooted freely, and on the 16th of May they were planted into well-prepared borders, the roots being more like those of young Rose trees than Vines. Here they soon began to grow vigorously, every Vine going quite to the top of the house, a distance of 21 feet, and in some cases 6 or 7 feet down the back wall, making fine, short-jointed wood. They were allowed to carry all their laterals and to grow without restriction, so they completely clothed each roof. On the 12th of December, being six months from the time when they were planted, or a little over ten months from the time in which the eyes were placed in the pieces of turf, they were all cut back to about 6 feet from the ground, and averaged from 2 to 3 inches in circumference. On measuring a Vine in each house, I find the dimensions to be as follows:—1st. Black Hamburgh, circumference at 18 inches from the ground, $2\frac{7}{8}$ inches, or $\frac{1}{8}$ short of 3 inches; length of wood made in the season, including laterals, 106 feet; 2nd. Muscat of Alexandria, circumference $2\frac{1}{4}$ inches, length of wood 108 feet; 3rd. Lady Downes seedling, circumference $2\frac{1}{2}$ inches, length of wood 161 feet. I am strongly of opinion that were we to pay more attention than we do to the preparation of Vines before we plant them, we should hear less than we do of sudden and, in some cases, unaccountable causes of failure. Nor need the practice of planting young healthy plants in preference to older ones be confined to Vines, for I consider that it is equally applicable in all cases of permanent planting, including that even of shrubs and Conifers. Within a stone's throw of where I write I could point to Conifers planted five years ago, not more than 9 or 12 inches high, in close proximity to others then, 5 and 6 feet high, but now the small ones are quite equal to the large ones, and in some cases even considerably finer plants, thus showing the advantage of putting in in all cases well-prepared plants at first.

Drinkstone Park, Bury St. Edmund's. W. Nichol.

[Along with this communication came some remarkably fine shoots of Lady Downes seedling Muscat of Alexandria, and Black Hamburgh Grapes, all well ripened, hard, and firm, each shoot being as thick as one's thumb.]

A Mountain Fir. (See p. 73.)

VINES ON OPEN WALLS.

May I be permitted to plead the cause of that much-neglected fruit the Vine, and to advocate its more general cultivation on open walls? There is no fruit tree that suffers more when left to itself, or more liberally repays its owner for the care he bestows upon it and the skill he exercises in its cultivation. Of the sorts adapted to this mode of treatment my experience extends to two only — the common Sweetwater, which every one knows, and the Précose de Malingre, which is not so well known as it ought to be. It is a small white Grape, oval in shape, and intensely sweet, though otherwise of indifferent flavour. But its great recommendation is its coming into leaf and ripening its fruit so much earlier than any other sort. In proof of this I need only mention the fact that in the present year the Grapes on this Vine were ripe at the end of September, and, though not so good as when the season has favoured them, they were not only fit to eat but agreeable to the palate; whereas the Sweetwaters were worthless, though they found favour with the blackbirds and sparrows, the only bipeds that seemed to think them worth the trouble of gathering. The Précose de Malingre, I find, cannot be preserved without the protection of muslin bags. Even this year it required them. The year before last, the first season in which I allowed it to carry a full crop, the wasps attacked the bunches even before they were ripe. The wall soon became a mass of yellow clusters. It seemed as if every nest in Rutland had sent its contingent to test the quality of the new Grape. Muslin bags were hastily constructed and applied, but even through some of these the wasps found their way. Here then is a Vine which will always produce a crop of ripe Grapes. Like other Vines, it can be made to fill its allotted space much faster than a fruit tree of any other sort, and can be trained along the slopes of roofs, and over outhouses and places inaccessible to wall trees of the orchard type. In such positions I find even the Sweetwater to produce excellent Grapes in good seasons, such as the summer of 1870 and the three that preceded it. Some degree of success may perhaps be attributed to the soil—the red soil as it is called in this part of England, which, though unfavourable to orchard fruits in general, seems to agree with the constitution of the Vine. Vine borders, however, are easily made, and it is always worth while to improve and enrich the soil in which a profitable tree is growing; and good food is never thrown away upon the Vine. If every farm house had a properly cultivated Vine trained over the southern side, or even if every Vine now existing in such situations was properly cared for, there would be in ordinary seasons no deficiency of palatable outdoor Grapes in the midland and southern counties of England.—B. S.

Oranges in Sicily.—At a recent meeting of the Berlin Geographical Society, reported in *Ocean Highways*, Herr Langenbach read a paper on the culture of the Orange in Sicily. The Agrume is first met with in latitude 44°, while the sweet Orange does not grow plentifully above 41°. The lecturer stated that there are seven different species of Sicilian Oranges, which are subdivided into no less than thirty-two different kinds. It is probable that the Arabs first introduced this fruit from Southern Asia; moreover, the Citrus medica, which appears to be the maternal fruit, is still to be found wild in parts of India. Sicily is peculiarly suited to the growth of the Orange, abounding as it does in clay and chalky soils, which are the most favourable to the tree. It has, nevertheless, much need of artificial irrigation to enable it to mature properly. Although Sicily was once the granary of Italy, it now produces only one-ninth of the cereal produce derived from the entire kingdom. But with regard to the Agrume, Sicily is extremely rich, deriving as it does from that source a gross produce of 200,000,000 francs. The main misfortune of the country consists in the crowded state of its towns and the sparseness of its rural population.

Orchard Pruning.—What I should particularly recommend at the present time is immediate and decisive action as to the pruning and thinning of fruit trees. There is scarcely an orchard or garden that does not require severe overhauling in that respect, and the labour will be well bestowed. If the trees are of full size, get into the centre and at once clear away all the minor crossing and crowding branches, taking them away with a clean cut. That done, if necessary, thin out some of the principal branches, and leave the tree so that light and air can pass freely to every part. This will add materially to the strength of the branches retained, and the fruit, though numerically less, will be infinitely larger and of very superior quality. Some years back, when restoring a garden that had been left for upwards of twenty years to the tender mercies of a day labourer, I found some fine old Apple trees that had been left to nature for that time. From one grand specimen of the Blenheim Orange I cut as much wood as made twenty-five large faggots, and the following season I had the finest crop of the largest Apples of the kind I ever saw, not one of them being less than eight ounces in weight, and some of them more than a pound. All Apples might be increased in like proportion by the judicious pruning of the trees and the early thinning of the fruit.—P. A.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Our First Apple Trees.—The common or cultivated Apple tree was first introduced into England in the reign of Henry VIII., by Leonard Mascall, who planted it at Plumpton Place, near Lewes, Sussex. Some of the oldest cultivated Apple trees in England are to be found in the neighbourhood of Lewes, where the greater part of the trees are raised from cuttings.—C. Richardson, *Godstone, Surrey.*

Orchard Labels.—For a cheap durable label I do not find anything better than strips of tin, half an inch or more in width at one end and tapering nearly to a point at the other. The name is scratched on the broader end by an awl, the point of a file, or other hard point, so as to cut through the tin-coat into the iron. The name thus written becomes rusted where the point passes through, and renders the letters distinctly visible. The narrow end is passed once or twice around a branch, and holds the label, yielding as the branch grows.—Cultivator.

Peach Tree Protectors.—Is 2 feet wide glass protection for a Peach wall sufficient, and do you think the protectors require to be made to open to admit rain to the trees? [2 feet wide of glass protection on the top of a Peach wall will be sufficient (if the wall is not very high), to save the crop in severe frosty springs. The great help of such a protection is that it keeps the blossoms dry, so that when frost occurs it does not injure them so much as if they were wet. There will be no occasion to open the protectors until all danger from frost is over, and the fruit set, when the trees after that will require all the advantages they can get from the summer rains.—W. T.]

Low v. High Fruit Trees.—An Illinois fruit grower, who has 12,000 Apples and from 4,000 to 6,000 Pear trees, finds that "those with low heads of the same varieties show at least two-thirds more fruit, as large or larger, and as highly coloured as those with high tops." To test the matter, he cut off in certain rows all the limbs from 4 to 6 feet from the ground, and in others encouraged the limbs to start close to the surface, and in the latter case neither thinned nor pruned, except occasionally to lop away a too lusty shoot, in order to preserve a symmetrical appearance or an evenly balanced head; and the above is the result.

A Fruit Diet.—A lazy dyspeptic was bewailing his own misfortune, and speaking with a friend on the latter's hearty appearance. "What do you do to make yourself so strong and healthy?" inquired the dyspeptic. "Live on fruit alone." "What kind of fruit?" "The fruit of industry; and I am never troubled with indigestion."

THE KITCHEN GARDEN.

REPORT ON KALES GROWN AT CHISWICK.

It is exactly ten years since the last trial of Kales was made in the garden of the Royal Horticultural Society. That was a very partial one in comparison with this upon which I am now about to report, the number of varieties being much less, and the various names under which the different varieties were received greatly more numerous. When I reported on the same subject in 1862, I was struck by the amazing confusion in which the Kales were found; and my surprise has not been lessened by the present trial. From the very much fuller character of this year's experiments, I have been enabled in many cases to add to, and in some to correct, those of 1862. This I have been enabled to do by the very prompt and liberal manner in which the members of the seed-trade have placed their collections at the disposition of the society. It is proper here to state that, although many errors in nomenclature are to be found in this report, apparently originating among the seedsmen, no blame is to be attributed to them, nor is there to be any impeachment of their good faith on that account; for this confusion of nomenclature has existed not only for years but for generations, and however anxious they may have been to correct it, the task was one most difficult of accomplishment. Now, however, that something like order has been attained, I trust that a more general concurrence in nomenclature will be maintained.

Asparagus Kale.—The original Asparagus Kale of a century and a half ago was a sprouting Broccoli, which was introduced from Italy. It received its name from the young shoots, terminated by a "button," bearing somewhat of a resemblance to the young shoots of Asparagus. In course of time the name gradually ceased to be identified with the Broccoli, and was applied to another variety of Kale also introduced from Italy, called Milan Kale, or Chou de Milan, which has the property of throwing up in the spring a profusion of long succulent shoots, which, when fully grown, resemble the shoots of Asparagus. But there are several other varieties of Kale to which the name is applied; and as there seems no uniformity on the subject, I shall quote the varieties which different seedsmen regard as Asparagus Kale. Messrs. Minier, Nash & Nash, are correct in supplying Milan Kale. Messrs. Fraser and Mr. B. S. Williams supply Buda Kale. Messrs. Beck & Co., Messrs. Carter, Messrs. Clark & Sons, and Mr. G. Gibbs supply Couve Tronchuda. Messrs. Wrench, Sutton, Lee, Nutting, and Mr. W. Paul, supply Siberian Kale; and it is to be remarked that, as all these varieties produce an abundance of succulents in spring, the name is not misapplied; still it would be as well if it were confined to one particular variety, and that this should be the Milan Kale.

Buda Kale.—This is one of those varieties that are called Asparagus Kale. It is very dwarf-growing, the stock being not more than 6 inches high, and very leafy. In this condition it remains all the winter; and in spring numerous long shoots are produced, some of which are from 2 to 2½ feet in length. The leaves are smooth and very much waved. There are three varieties of Buda—the green, the purple, and the lettuce-leaved or strap-leaved. There is no difference, except in colour, between the green and the purple varieties; but the lettuce-leaved is very distinct, the blade of the leaf being decurrent down the whole length of the footstalk, resembling in that respect the leaf of a Lettuce, or of Laing's Swedish Turnip. As regards utility and fertility there is no difference; and all are equally hardy. The Buda of Messrs. Minier, Nash and Nash, and of Messrs. Wrench, was true; that of Messrs. G. Gibbs, and of Messrs. Lee, was Siberian; and that of Messrs. A. Henderson & Co., was Couve Tronchuda. It was also received from the following sources perfectly true, under different names, thus:—From Messrs. Fraser and Mr. B. S. Williams the purple variety as Asparagus Kale. From Messrs. Carter and Wrench as Delaware. From Messrs. Wrench as Jerusalem. From A. Henderson & Cattell as purple Jerusalem. The green variety was sent by Mr. J. Grant as Lapland Kale, by Mr. Cattell as Egyptian, by Messrs. Sutton as new winter Kale, and by Messrs. Vilmorin, of Paris, as Chou à faucher. The lettuce-leaved variety was sent by Messrs. Clarke & Sons as Jerusalem Kale.

Cottager's Kale.—It seems to be generally agreed that the cottager's Kale is to preserve its undisputed individuality, as there were no instances, throughout the trial, of this excellent variety being received under any other name.

Curled Kale.—By far the most popular and most extensively cultivated of all the Kales are the curled or Scotch Kales, sometimes also called Curlies, German Greens, or Borecole. There are four distinct forms of the curled Kale—the dwarf and tall green curled, and the dwarf and tall purple curled. Those which are most generally cultivated are the green forms; and the great object of cultivators is to obtain these with the leaves as finely and as much curled as possible; and in proportion as they are so, the more or less is the stock appreciated. Hence has arisen the great number of names under which they are sold. From Messrs. Drummond and Mr. Cattell, the green form was received as Prince of Wales, from Messrs. Clarke and Carter as Hearting Kale, from Messrs. Hurst as Cabbaging and Tall Curled, from Messrs. Sutton as Sclater's New Cabbaging, from Messrs. Carter as Feathered Scotch and Abergeldi, from Messrs. Lawson as Superb Parsley Curled, Williams' Matchless, and Pontefract Green Curled, from Messrs. Stuart & Mein as Tynningham, from Mr. W. Paul as Jackson's Late Curled, from Messrs. Fisher, Holmes & Co. as Dwarf Green Curled Handsworth, from Messrs. Veitch as Veitch's Dwarf Late Curled, from Messrs. Minier, Nash & Nash, and Messrs. Beck, as Dwarf Green Curled Canada, from Messrs. F. & A. Dickson as Dickson's Imperial Dwarf Curled, and from Messrs. Barr & Sugden as New Moss Curled. All of these differed from each other only in the degrees of intensity with which the leaves were curled; and in this respect the New Moss Curled of Messrs. Barr & Sugden was remarkable. The Dwarf Purple form was sent by Messrs. Carter as Jerusalem Kale, and by Messrs. A. Henderson as Lapland; the Tall Purple from Messrs. Wrench as Brown Borecole.

Jersey Kale.—This is also called Cesarean Cow-cabbage, Tree-cabbage, and Jersey Borecole. It is a tall-growing plant, attaining the height of 4 or 5 feet, the stem clothed with long broad glaucous green leaves with long foot-stalks. In spring it throws out numerous long slender shoots, with which cattle are fed. It is never grown as a garden vegetable.

Long Scotch Kale.—This was received from Mr. W. Gorrie, of Edinburgh, as the true "Long Scotch Kale." It is the normal form of the wild Cabbage as it is found on the Dorsetshire coast. It was sent by Messrs. Vilmorin under the name of Couve murciana—and by Messrs. Sutton of Buckman's hardy winter Greens.

Marrow Kale.—This is the Chou moellier of the French, a form of the Jersey Kale which produces a long thickly swollen stem like a gigantic cigar, the swollen part being filled with a mass of tender pith. There are three varieties of the Marrow Kale, distinguished as the *white*, the *purple*, and the *small*. The white grows from 4 to 4½ feet high, the stem being smallest at both ends and thickest in the middle, where it is about a foot in circumference in the largest specimens.

Milan Kale.—The name by which this is often called is Chou de Milan. It is unfortunate that it is so; for Chou de Milan is the name given by the French to Savoys. Except that they both belong to the same genus, there is no resemblance whatever between the Milan Kale and a Savoy. The Milan Kale produces a stock from 18 inches to 2 feet high, clothed with plane bluntly-toothed leaves, and terminated by a close rosette of leaves forming a small incipient head. In spring it throws out a large quantity of fine succulent shoots, which, when cooked, form one of the most delicious dishes of the winter-green class; and it is from this circumstance that the plant has been called Asparagus Kale. From Messrs. Beck & Co., G. Gibbs, Nutting, Minier, Nash, & Nash, and Mr. Cooper, it was received perfectly true under the correct name. There is a purple variety received from Messrs. Vilmorin under the name of Flanders Purple.

Palm Kale.—The stem is 2 feet to 2½ feet high, clothed with large oblong obovate leaves, the blade of which is decurrent the whole length of the footstalk, of a dark green colour, which curve gracefully upwards and outwards, giving the plant the aspect of a miniature Palm. In the spring it throws out a profusion of long slender shoots, which are of no value as a vegetable. After these shoots are produced, the plant entirely loses its ornamental character. It was received from Messrs. Vilmorin under the name of Chou Palmier.

Ragged Jack.—Like the Cottager's Kale this seems to have few synonymes. Its character is sufficiently distinct to render it easy of identification, being a very dwarf variety with a stock not more than 4 to 6 inches high, and leaves which are deeply laciniated, the segments being trifid or multifid. It is generally of purple colour, and occasionally green. In the spring it produces a great quantity of tender shoots, which are much esteemed as a vegetable. It was received from Mr. B. S. Williams as Camberwell Borecole.

Siberian Kale.—This is one of the hardiest and one of the best of all the sprouting Kales. It is also very distinct, and can never be confounded with any other variety. The stock is very dwarf, being only 4 to 6 inches high. The foliage is always green. The leaves are sinuated, coarsely serrated, and plaited on the margin. In spring it produces a large crop of tender shoots, from a foot to 15 inches in length. This is one of the varieties the nomenclature of which is very confused. From Mr. B. S. Williams it was received quite true as "Siberian" or Lapland; from Messrs. Wrench, Sutton, William Paul, Lee, and Nutting, it was received under the name of Asparagus Kale, from Mr. G. Gibbs as Buda Kale, from Messrs. Nutting, A. Henderson, Cattell and Drummond, as Delaware, from Messrs. Minier, Nash & Nash, Sutton, G. Gibbs, Lee, Carter, and Cooper, as Jerusalem, from Messrs. Carter as Acme, and from Mr. Cattell as Curled Jerusalem.

Woburn Kale.—This closely resembles the wild Cabbage, and long Scotch Kale; but it appears to be of a more perennial character. It may be propagated by cuttings, as, indeed, all the other varieties may; but it is more woody and shrub-like in its growth. It is not worth cultivating, except in very northern and exposed situations, as it is very hardy, and will stand more rigorous winters than perhaps any of the other varieties.—*Proceedings Roy. Hort. Soc.*

Broccoli Culture.—Broccoli in some shape, and Mushrooms in plenty, are two things indispensable at Burghley. Just now we have a good stock of Walcheren, well covered with Fern—the best of all protections for outside things, followed by Snow's Broccoli, also covered up. For my first crop of Walcheren I sow the seed about the middle of August, and plant (under handlights) the first week in October all the large plants, reserving the small ones for three-light boxes, which give me a succession from the first week in June until the last in July. These are followed by a pinch of seed sown inside in February, which comes into use in August. In March we make a sowing on a south border, and another the first week in May; and by picking out all the best plants first, leaving the smaller fry for the last batch, we are enabled to keep well on until Christmas. The land cannot be too highly tilled for Cauliflower, trenching and manuring being the order of the day; but for spring Broccoli the case is different. We want good stocky plants. They are the following crop after the early Potatoes are cleared, and the firmer the land the better. We strike the lines 3 feet apart, and plant 2 feet 6 inches apart in the row, one man making the holes with a crowbar, and another dropping in the plants. The only planting required is to well wash the dry earth into the holes, filling them level with the ground; and they seldom require any more water. We never lift or lay in our Broccoli, the plants being sturdy and hardy, but in severe weather we cover the whole with Fern, the wind, rain, &c., washing them down to the fatal spot—the neck, and thus preserving them. The following varieties keep us supplied with Broccoli nearly the whole year round:—Snow's Winter White; Osborne's, a real good thing; Early Malta; Frogmore Improved; for early spring, say January to April, when we have Ellester's White Protecting, Hibbe's Royal Alfred; and for latest of all, Cattell's Eclipse, the best of all Broccolis for late work.—*R. Gilbert, in Florist and Pomologist.*

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Sutton's Red-skinned Flourball Potato.—Several correspondents write in praise of this Potato as being free from disease, and in every way of fine quality.

Horseradish.—It may not be generally known, that by placing leaves or litter on the tops of Horseradish crowns 2 feet or so thick, the plants grow through them in the course of the summer, making small white roots the thickness of one's finger, which are as tender as spring Radishes, and a great step in advance of the tough stringy stuff usually supplied with our roast beef. —R. GILBERT.

Salad Culture.—On examining some salads in a market garden a short time ago, we were struck by the difference which existed between different squares in which they were planted. Some had the appearance of having been sown long before the others, and of having been better tended, but such had not been the case, the increased vigour being simply due to a slight coating of old tan, with which the soil was covered. Where the soil had been covered with straw, the plants were not nearly so fine as where the tan was used.—*Revue Horticole.*

Mushroom Spawn.—The best spawn I ever used was some that had been kept above a warm and dry place for two years or more. It became as hard as a board, and had to be broken up with a hammer when wanted for spawning the beds. I find also, that spawn kept in this way produces Mushrooms sooner than under ordinary circumstances. I have seen the Mushrooms up in four weeks from the date of spawning, and have gathered plants in six weeks—about the period, it is generally supposed, that spawn requires to run. Many Mushroom growers make a mistake in spawning their beds at too low a temperature, say at 75°. This temperature will do, but a temperature of 85° is perfectly safe, will cause the spawn to run sooner, and will give quicker returns.—J. S.

RESULTS OF GARDENERS' EXAMINATIONS AT SOUTH KENSINGTON, 10TH DECEMBER, 1872.

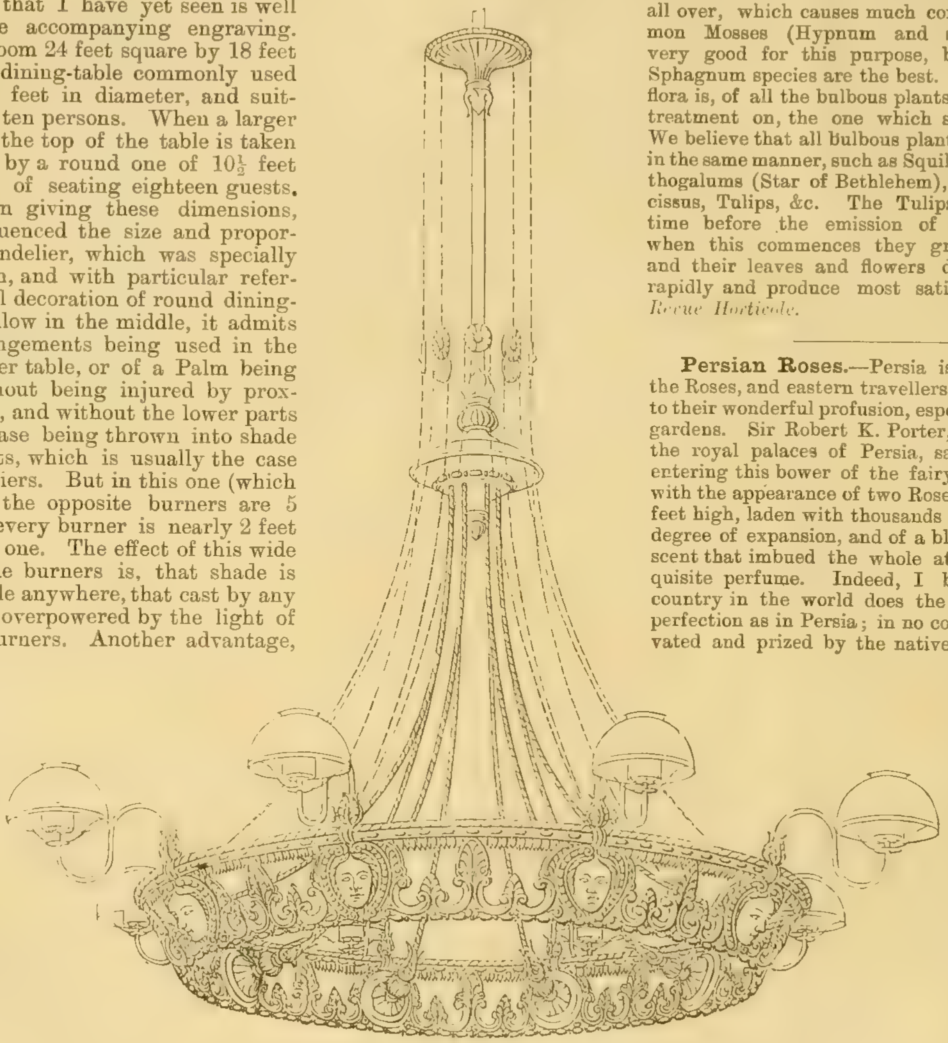
	Horticulture.		Floriculture.	
	Class.	Marks.	Class.	Marks.
W. Bell, Royal Gardens, Kew	1st.	1,000.	1st.	1,010.
J. Cameron, Royal Gardens, Kew ...	1st.	1,020.	2nd.	830.
Jas. Morrison, Royal Gardens, Kew ...	2nd.	850.	2nd.	750.
D. C. Powell, Kingston Hall, Derby ...	2nd.	850.	1st.	965.
J. A. Shaw, Royal Gardens, Kew ...	2nd.	710.	1st.	970.

THE GARDEN IN THE HOUSE.

ILLUMINATION OF DINNER TABLES.

Where flowers are much used for decorating dining tables, it is important that there should be some fixed and suitable means of lighting the room. For this purpose there is nothing more convenient than gaslights, provided that the gas is of good quality and the room is well ventilated. Assuming that these conditions have been secured, the position or distribution of the lights next demands consideration, and is a matter worthy of more attention than is commonly bestowed upon it. It is too often the case that chandeliers, for instance, are chosen more for the beauty of their appearance by daylight than for their provisos after dark. The best chandelier for a dining-room that I have yet seen is well illustrated in the accompanying engraving. It is put up in a room 24 feet square by 18 feet high, where the dining-table commonly used is a round one, 7 feet in diameter, and suitable for eight to ten persons. When a larger party is expected, the top of the table is taken off and replaced by a round one of 10½ feet diameter, capable of seating eighteen guests. I am particular in giving these dimensions, because they influenced the size and proportions of this chandelier, which was specially made for the room, and with particular reference to the floral decoration of round dining-tables. Being hollow in the middle, it admits of very tall arrangements being used in the centre of the larger table, or of a Palm being placed there, without being injured by proximity to a gas-jet, and without the lower parts of the plant or vase being thrown into shade by the upper parts, which is usually the case with most chandeliers. But in this one (which has eight lights) the opposite burners are 5 feet apart, while every burner is nearly 2 feet off from the next one. The effect of this wide distribution of the burners is, that shade is scarcely perceptible anywhere, that cast by any one burner being overpowered by the light of the other seven burners. Another advantage, and a very important one, of placing the lights so far apart from each other, is that the illumination of the table and its decorations is less glaring and more evenly distributed, not only over the table, but also over the whole room.

W. T. P.



THE TRITELEIA UNIFLORA IN MOSS.

Towards the end of last February it was remarkable to see at 20, Quai de la Megisserie, Paris, handsome saucers filled with fresh mosses or turf of a beautiful bright green, on which shone the elegant colours of the flowers of Triteleia uniflora, a pretty Liliaceous plant of Texas, which is well known, and which is largely cultivated for its pretty blossoms. It is, however, the first time we have heard of its being cultivated in this manner, so we think it may be useful to give a few instructions on the means employed to obtain these results. The best time for planting the bulbs of the Triteleia in moss is November or December, but they will succeed if planted early in January. The manner of planting is as simple as possible. Take some pieces of common Moss in its natural state; if too dry it must be wetted, and then fill the plates or saucers destined for this pretty plant. The bulbs are simply placed on a little heap of moss or turf, and care is taken to have a certain quantity of water in the saucers thus prepared, but which in any case must not exceed half the depth of the saucer. When the bulbs are placed the saucers must be put in some dark spot, the same as is generally done when bulbous plants are cultivated in vases or bottles. A cellar or cupboard are good positions. Darkness and also a temperature a little elevated, and above all damp and regular, are conditions propitious to the emission of the roots. When these are sufficiently numerous and developed the saucers are taken to a very light place (where the frost cannot touch them). The Triteleias thus treated flower about three months after the bulbs are planted. These ornamental saucers can be made even prettier, by sowing some seeds of fine grasses; but they ought to be sown at least six weeks or two months after the bulbs are planted. A simple border of these round the saucer is more elegant than the result of seeds of the same kind sown all over, which causes much confusion. The common Mosses (Hypnum and similar kinds) are very good for this purpose, but those of the Sphagnum species are the best. The Triteleia uniflora is, of all the bulbous plants we have tried this treatment on, the one which springs up soonest. We believe that all bulbous plants can be cultivated in the same manner, such as Squills, Hyacinths, Ornithogalums (Star of Bethlehem), Persian Iris, Narcissus, Tulips, &c. The Tulips remain for some time before the emission of their roots; but when this commences they grow very quickly, and their leaves and flowers develop themselves rapidly and produce most satisfactory results.—*Revue Horticole.*

Persian Roses.—Persia is the very home of the Roses, and eastern travellers have often referred to their wonderful profusion, especially in cultivated gardens. Sir Robert K. Porter, speaking of one of the royal palaces of Persia, says: "On my first entering this bower of the fairy-land, I was struck with the appearance of two Rose trees, full fourteen feet high, laden with thousands of flowers, in every degree of expansion, and of a bloom and delicacy of scent that imbued the whole atmosphere with exquisite perfume. Indeed, I believe that in no country in the world does the Rose grow in such perfection as in Persia; in no country is it so cultivated and prized by the natives. Their gardens and courts are crowded by its plants, their rooms ornamented with vases filled with its gathered bunches, and every bath strewn with the full-blown flowers plucked from the ever-replenished stems. . . . . But in this delicious garden of Negaaristan, the eye and the smell are not the only senses regaled by the presence of the Rose. The ear is enchanted by the wild and beautiful notes of multitudes of nightingales, whose warbling seem to increase in melody and softness with the unfolding of their favourite flowers. Here, indeed, the stranger is powerfully reminded that he is in the genuine country of the nightingale and the Rose." Sir William Ouseley accompanied his brother, the ambassador, on a visit to a man of high rank, at Teheran, and though there was a great profusion of meat and fruits at this entertainment, "it might," he says, "have been styled the feast of Roses, for the floor of the great hall, or open-fronted *talar* was spread in the middle, and in the recress, with Roses, forming the figures of cypress-trees. Roses decorated all the candlesticks, which also were quite numerous. The surface of the *hawz*, or reservoir of water, was completely covered with Rose-leaves, which were scattered on the principal walks leading to the mansion. The surface of the reservoir was so entirely covered with Rose-leaves that the water was visible only when stirred by the air, and by the servants, during the entertainment, continually scattering fresh Roses both upon the water and the floor of the hall."

THE HOUSEHOLD.

CABBAGE.

THE Cabbage is in many houses a forbidden dish, because the odours which arise from its cooking are so obnoxious, but if these directions are followed, there will not be much if any complaint: Quarter the Cabbage the night before it is required, and remove the hard stalk; wash it well, and cut into small pieces. Next morning change the water, and when ready to cook, skim out the Cabbage into a large pot of boiling water, with a small teaspoonful of saleratus added to it. Boil steadily for forty or fifty minutes, but take care that the water does not boil over upon the range or cooking stove, for this is one of the chief causes of the very disagreeable odour which fills the house. If you are cooking corned beef at the same time, after skimming it thoroughly you can add a pint of the liquor in which it is boiling to the Cabbage, as some like the meaty flavour, and if there is no beef liquor at hand, a piece of beef suet will answer the purpose; but Cabbage should never be boiled in the same vessel with salted meat, as it spoils the flavour of both. When the Cabbage is so well boiled that it will easily mash with a knife skim it out into a colander, and press out all the water, and season it with butter, salt and pepper. Prepared in this way, Cabbage really becomes an inviting dish, and is a very healthy one. It is because it has so often been badly cooked, that it has fallen into disrepute. If you prefer to have the Cabbage more in shape, it can only be halved, and the hard stalk cut out; then tie it up in a piece of coarse muslin, and boil for one hour, always putting it into boiling water at first.—*Cultivator.*

A New Process of Preserving Fruit.—A description is given in an American paper of one of the evaporators in New Jersey, where fruit and vegetables of every description are preserved by the Alden process. Three hundred bushels of Apples are just now being run through the mill each and every day, and Peaches, Plums, Grapes, &c., came in for their share of notice in their respective seasons. In the vicinity of the works cars were loading, and there was all around swift movement, indicative of business enterprise. Orders from Government at present occupy attention. The point is, that a soldier going out to fight the Indians can carry in his pocket evaporated vegetables and fruit enough to last him a month or more. By this excellent process it is rendered possible and profitable to save crops, however large they may be, and however low the prices. Before such processes were invented, in plentiful years the fruit used to go to the pigs.

Champignons Farces.—This delicious dish, known to all cooks in France, is easily prepared and much relished. Take Mushrooms, large or small, according to taste; wash, but do not soak them; dry them well, and finally skin them. Cut off and mince the stalks, and add a quarter of the quantity of chopped Parsley and the same of Shallots, also chopped fine; dry the mince by squeezing it in a clean cloth, and cook it for five minutes with butter melted with a little stock, or *bouillon;* when the sauce is done, pour it over the Mushrooms laid in a buttered tin or plate, and place them in an oven or Dutch oven, for about ten minutes. The delicacy of this and many other dishes depends upon whether the cook knows how to make sauce; the best mode in this case being that which is called *roux* in the French *cuisine*, which is as follows:—Melt fresh butter in a small saucepan, and stir in two-thirds of its own weight of fine flour; when completely mixed, let the saucepan stand for at least an hour, in hot cinders, stirring the butter occasionally with a wooden spoon; if for brown sauces let it stand two hours, instead of one, on the cinders. The *roux* may be used immediately or put away in a covered pipkin, slightly buttered for future occasions. Butter thus melted blends agreeably with all sauces, and forms a delightful contrast to the pasty stuff often served for melted butter.

Cocoanut Pudding.—Soak for two hours in a pint and a half of milk a teacupful of fine bread-crumbs and the grated meat of a cocoa-nut, then add the well-beaten yolks and whites of six eggs, a teacupful of sugar, the grated rind of a lemon, and a pint and a half of milk. Stir well together and bake in a hot oven. Like all other custards, this must not be allowed to remain in the oven long enough to become watery.

A New Winter Salad.—Ordinary Buckwheat, such as we give to fowls, grown in a moderately warm greenhouse, and cut like Mustard when about 2 or 3 inches high, makes a delicious winter salad, a combination of Lettuce and Corn-salad in flavour. It can be grown in pans all the year round without the least trouble, and even when Lettuces are plentiful will be found a very desirable addition to the salad bowl.—W. H. CULLINGFORD, *Kensington.*

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—Plants of Berberis Darwinii and Aquifolium form lovely objects just now, both in the front of shrubberies and as isolated specimens on lawns. Amongst dwarf-growing plants, few can at present equal some of our hardy Heaths, which are very effective; but should there be in any case a lack of flowers, the deficiency may be made up if plants of Daisies, Aconites, Arabis, Saxifrages, Alyssums, Pansies, &c., are lifted with good roots from the reserve ground, and transplanted to where they are required to bloom. Indeed Daisies may be lifted with good balls before winter sets in, and placed in lines about six inches apart in a bed of ashes, purposely for spring transplanting. Aconites grown in pots until they come into flower can be transferred to the open ground, to make up vacancies or to supply colour. If roots of Fennel plants were placed as centres in beds as soon as the summer bedding plants were removed, they will now be producing most beautiful foliage, and among such plants none are so effective as F. gigantea, but tingitana and glauca may also be used for the same purpose. Polyanthuses and Primroses of various kinds, even although in bloom, may be shifted to where they are most required. On some kinds of herbaceous plants the old flower-stems should be left, unless they are growing in prominent positions, as the dead spray is of importance in protecting the crowns of the plants from frost. This is particularly requisite this season, as some of the plants have already begun to grow. The hardier sorts of herbaceous plants may be lifted, divided, and replanted. Periwinkles should now be lifted, and transplanted under the shade of trees; St. John's Wort and Irish Ivy are also plants admirably suited for such work, and will grow and flourish where grass will not thrive. Place some sifted ashes around the necks of plants likely to suffer from frost. Keep the crowns of Funkias well protected with leaves, cocoa-nut fibre, or ashes. Be prepared for protecting plants in borders, and shrubs and climbers on walls. Do not prune any shrubs that are comparatively tender until warmer weather sets in, for they are too far advanced already, and pruning would only assist further progress, as well as liability to injury from frost. Hardy deciduous shrubs may, however, still be pruned.

Conservatories.—Before growth begins afresh in the case of greenhouse climbers, let them be pruned and thinned, so that the young shoots may break away strongly. Specimen Heaths, Chorozemas, Brachysemas, and some other plants are advancing too hurriedly, *i.e.*, if intended for the purposes of exhibition; therefore remove them from their present quarters to houses having a north or east aspect, or, in the absence of these, to the coolest part of the conservatory. Those that are not to be repotted this season should be properly staked; any that are shifted, however, should have all old stakes taken out and replaced by fresh ones, and if any of the present ones be used they must be repointed. Shift Calceolarias and Cinerarias when necessary. Sow, if not already done, some Cyclamen seeds. Start a few Fuchsias into growth for spring and early summer blooming. Put in any Chrysanthemum cuttings that may be required; if sufficient stock has been obtained, transfer the old plants to the open border. Examine all soft-wooded plants, and remove decaying portions. Keep show and fancy Pelargoniums near the glass in cool airy houses. All evergreen plants, especially Azaleas, should be gone over occasionally, and should have all decaying leaves removed from them. Maintain a good succession of blooming plants from the forcing pits, and continue to introduce according to the demand and convenience another supply to take their place. Syringing twice a-day assists the bursting into growth of the buds of shrubs, and a hasty formation and development of their flowers. Hyacinths, even under the coolest possible treatment, have already pushed up their leaves, which are 2 inches above the pots, and their flower-spikes are formed. To ensure success, transfer them from their outdoor plunging material to a moderately cool pit. Arrange them on the side shelves, admit air freely, and keep them comparatively dark by shading thickly with mats.

Stoves.—Allamandas, Dipladenias, Stephanotises, Bougainvilleas, and Clerodendrons (climbing ones) should be cut back at once if not already done, and repotted as soon as convenient, but not encouraged to make growth. Keep the soil pretty dry even after potting, insert the principal stakes, and preserve the young growths from getting broken. Plants of Poinsettias and Euphorbia jacquiniæflora done blooming should be stored away on back shelves under the stages, or in any other place where they can be kept dry in an intermediate house or coolest end of the stove. Aphelandras done flowering may be treated in the same way. Do not allow any young plants to suffer from want of root room, but give them a shift as soon as they require it. Of stove bulbous plants at rest start a few into growth, and keep those already breaking into leaf in a nice growing temperature. Syringe daily and maintain a high temperature in the Gardenia house where the plants are late in coming into bloom.

Orchids.—From amongst these the warmest nooks in our conservatories are being supplied with their most showy flowers. Oncidiums, Odontoglossums, and Cœlogynes are in great beauty, and these, together with Phalænopsids, furnish masses of white flowers, orange and crimson and allied colours being furnished by Masdevallias, Adas, Sophronitis, Epidendrums, Barkerias, &c., whilst Cattleyas, Vandas, Saccolabiums, Lælias, Dendrobiums, Phajus, Restrepias, &c., afford an immense variety of both colour and form. Prepare materials for a general potting next month and the succeeding one. Begin to pot as soon as practicable Odontoglossums, Miltonias, Masdevallias, &c., and those not requiring this at present should be top-dressed. Any Calanthes not yet placed at rest should be laid on their sides and kept dry. As soon as any appearance of growth presents itself in the earliest rested plants, repot them and place them under growing conditions. Keep Pleiones in a nice growing state; any of the varieties that have not finished blooming should be repotted as soon as their last flowers are past. Maintain a moderately moist atmosphere in all the Orchid houses, otherwise Phalænopsids and other long aerial rooted species will suffer.

Indoor Fruit and Forcing Department.—Pine plants intended for starting next month should have the temperature increased a little, but no extra watering should be given to the roots. Supply those throwing up and those swelling fruit with both atmospheric and root moisture. Do not disbud Peach and Nectarine trees too much at first, but syringe daily all trees started into growth, before or after flowering; but do not, under any circumstances, apply the syringe to trees in flower at this season. For Cherries, heat produced from fermenting material is most congenial to their wants; and their roots, when plunged in it, are greatly benefited by a little extra heat. Top-dress the pots with good loam and thoroughly decayed manure. The May Duke is a useful sort for early forcing. Maintain a brisk temperature in Vineries where the plants are in bloom. Stop, thin, and remove shoots as required. Attend to timely thinning of the berries, moisture, and proper temperature. Muscats in bloom require 5° higher temperature than Hamburghs. Strawberries required to throw up their flower-spikes should be kept rather dry for a short time, to induce them to do so, but water freely after the fruit has set. Keep up successional supplies of Rhubarb, Seakale, Asparagus, Dandelions, Lettuces, Endive, Chicory, Chives, Tarragon, Mint, small salads, young Onions, Carrots, Radishes, &c. For these prepare hot-beds, and utilise any already put up.

Hardy Fruit and Kitchen Garden Department.—Proceed with the pruning and nailing of wall trees, such as Plums, Pears, Cherries, and Apricots; and all standards, if not already done, should be pruned as expeditiously as possible. Moss growing on the stems of old trees should be scrubbed off, and afterwards the trees and large branches should be washed with a mixture of lime-water, soot, and brine. Root-prune over-vigorous trees, taking care not to encroach too severely on the roots. Cut off shoots to be used as scions in grafting, and insert their ends in soil in some well-sheltered situation. Head back stocks, for if allowed to remain without being cut until the sap is in active circulation, the bark commonly dies back a little below the wound. Freely expose Lettuces, Cauliflowers, &c., in frames in favourable weather, protecting them from frost at night. Plant in dry ground Ash-leaf Kidney Potatoes, and make new plantations of Horseradish and Jerusalem Artichokes. Sow some Parsley on a sheltered spot, also some of Wood's Frame Radishes on a south wall border; Early Horn Carrots may be treated the same as Radishes. Some Early Dutch Turnips may likewise be sown on a warm border. Avoid sowing anything on sodden soils, as much harm is done by so doing, and whole crops frequently lost.

NURSERIES.

Indoor Department.—The grafting of Tea, Noisette, and other Roses should now be proceeded with, using the Manetti stock for the purpose. Side or cleft grafting is the best method, and for this purpose the stocks should be established in 60-sized pots and decapitated previously to the scions being affixed. Tie them on with worsted, over which put a covering, consisting of pitch with a little bees' wax, and a piece of a tallow candle mixed with it. If the pots containing the plants are plunged in cocoa-nut fibre, and have a moderate bottom heat, and a temperature of from 55° to 65° be applied, the result will be satisfactory. Permit shoots to spring from the stocks unrestricted until the scions have formed leaves sufficiently strong to elaborate the sap, when all shoots from the Manetti should be rubbed off and in future kept from appearing. Take indoors Rhododendrons for grafting purposes, and lift a few more from the open ground, which should be potted into 4 or 6 inch pots for autumn grafting. Rhododendrons, however, like most other plants, thrive best when grafted in spring. The grafting of Camellias should now be proceeded with; but in their case, as in that of evergreen plants in general, do not cut them over like Roses; on the contrary, affix the scions to the sides of the shoots or stem by removing a small piece of the bark and wood, cutting downwards; and at the base of this longitudinal cut, leave a niche to prevent the scion from slipping down; then tie the scion firmly in its place with a piece of matting, worsted, or other soft material. Autumn-grafted Ivies may now be turned out into cold frames, or plunged amongst cocoa-nut fibre at the bottom of a north wall. Do not remove the tops of the plants yet, because the scions have not sufficiently attached themselves to be able to properly utilise the sap. The spring grafting of Ivies may now be begun if a little start is given to the plants. Young Oak stocks potted in sixty-sized pots may be kept under the stages of a cool pit if not liable to drip, and the finer kinds grafted on them after they have started into growth. Graft now all the finer kinds of Daphnes, using D. pontica or D. Mezereum for stocks. Daphnes require to be kept in close frames in an intermediate house. Autumn grafted Hollies may be removed from the pits to sheltered positions out of doors and treated like Ivies. Autumn inserted cuttings of various kinds of Conifers, Euonymuses, Euryas, Hollies, &c., should still be kept rather close and in very gently heated pits. Do not interfere with Japanese Maples that were layered in pots sunk in beds indoors in autumn until after active growth has commenced, for then they form most of their roots, an operation in which they are aided by being left adhering to their parents. Any time throughout the early summer they may be partially, and in a few weeks afterwards, wholly severed from their parent stocks, so that the latter may have sufficient time to perfect and ripen their young wood, which may be similarly layered early in autumn. Cuttings of Box, the common kinds of Ivies, Portugal Laurels, Bays, Laurustinuses, and many others inserted in autumn under handlights in well sheltered corners, or between hedges, should have the protection of a mat in cold nights. If the handlights are made so as afford ventilation at top, there will be no necessity for tilting up the lights at any time during the winter.

Outdoor Department.—The ground between rows of Conifers not intended to be removed this spring should be dug over, but not so as to injure the roots. Chickweed and other pests of that kind have grown so freely this winter that a rough weeding is necessary before digging, otherwise the overturning of the soil simply means transplanting the weeds. When the layers of deciduous plants, such as Limes, Planes, Poplars, Cornuses, &c., are sufficiently rooted they should be removed and transplanted, so as to permit of the ground being dug, and last year's wood being layered a little later in the season. Insert cuttings of deciduous trees and shrubs in sheltered places, such as in narrow borders, at the base of walls or hedges, in rows 6 inches apart, and an inch or thereabout between the cuttings, which should consist of last year's wood cut into pieces from 6 to 9 inches long. Lime, Poplars, Elders, Weigelas, Spiræas, such as prunifolia, Ribes, Deutzias, Cornuses, Buddleas, deciduous Magnolias, Viburnums, Jasminums, such as nudiflorum, Willows, and many other plants, may be increased from cuttings inserted in this way, between January and March. Retain the covering of Birch branches and other material laid over beds of seedling] Rhodondrendrons, Arbutuses, Cotoneasters, &c.; and should hard frost come give some additional covering if necessary. Transplant Conifers of various ages, but not so thickly as to touch one another in the rows.

MARKET GARDENS.

Continue the manuring and digging of such ground as can be worked; towards the east and south-east of London, however, many fields are yet flooded some feet in depth, particularly between Stratford and Lea Bridge, where little is to be seen but water, not only obstructing outdoor garden operations, but also rendering roads almost impassable. The third Radish crop now being in the ground bird scaring is necessary, both on account of it and the second crop; the first is too far advanced to suffer from these pests. Keep if possible all Radish plantations near one another. Transplant any Cabbage plants that may yet remain unplanted. Preserve some of the finest plants of Brussels Sprouts for seed, also Savoys, Sprouting Broccoli, and Coleworts; remove them from the main plantation to some spare spot, and keep every kind together, for when apart they are apt to get crossed through the insect agency. Make a sowing of Spinach. Get ground in readiness for early Potatoes, and have some forethought as regards the Onion crop, which should be sown next month. Lift layers of Moss Roses, and transplant them in lines 15 or 18 inches apart.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

THE SEASON.

Frost now seems likely to take the place of the abundant rains which have induced such an unusually early bloom in our gardens, as well as encouraged the late growths of the past year. The probability is that our gardens are likely to suffer much during the coming few weeks, and a few words as to the best course to pursue in the presence of such danger may not be without use. It will be wise to see to the thorough protection of any favourite specimens that are known to be at all tender. Even "protection" that merely shades the plant from the sun often saves its life. Camellias, and many tender plants, will survive upon the north side of a wall or fence, although they would perish if exposed to the sun on the southern side. If mats or other covering cannot be spared, take some Fern or straw and shake it thinly over the plants; or, what will do equally well and be more sightly in dressed ground, go to the woods and cut branches of Spruce, Scotch, or other Fir trees, and place them so as to shade and protect the plants. A sudden thaw, with full exposure, will split the bark of a tree in all directions. Shade the plant, allow it to thaw gradually, and little or no injury will be done. Just the same is it in the greenhouse. If the plants are frozen, shade them; apply fire-heat, and directly the temperature of the house is raised above the freezing point, syringe the plants gently with *cold* water until such time as they are quite thawed. Some adopt the practice of thawing with warm water, and the plants are immediately destroyed. Several years back, when we had more than 20° of frost for several nights in succession, we had a quantity of Calceolarias in a Vinery to which we could not apply any heat. They were frozen as hard as stones, and some thought irretrievably destroyed. We had them laid on their sides upon the frozen ground, covered with some old doors, and then some straw. A week after the thaw came they were uncovered, and proved to be as fresh and healthy as if they had never been exposed to frost at all. When tender plants are frozen, no better rule can be followed than to keep them closely covered up until they are thawed. Let there be no deviation from this rule, and little injury will be sustained. With kitchen garden crops much the same rule must be followed—shade and shelter. The other day we walked through the fine kitchen garden of the Marquis of Exeter, at Burghley. No man grows vegetables better than Mr. Gilbert, the intelligent gardener there; and we found the whole of his crops—Cauliflower, Broccoli, Brussels Sprouts, Savoys, Celery, Parsley, &c., covered over with a thin sprinkle of dry Fern or Bracken, as it is commonly called. In this manner Mr. Gilbert assured us he generally succeeded in securing his crops, and hoped to do so this season. These general hints will show what it is best to do at the present time. We fear many will find their Potato and other root stores under the icy embrace of frost. If so, they cannot possibly do better than cover thickly with dry straw or litter of some kind, so that when the thaw comes it may act as gradually as possible. After Murphy's winter, when, on January 1, 1838, at four o'clock in the morning, we saw the thermometer standing at 8° below zero, or 40° of frost, we picked up from among the leaves of a Strawberry bed an Apple and a Potato both perfectly sound, though they had been exposed to such intense cold. The Potato was planted and produced a crop; the Apple, after being kept for some weeks as a curiosity, was eaten and found to be of fair flavour. This is a sufficient illustration of the advantage of shade, darkness, and slow thawing. We are not prepared to say that either Apples or Potatoes will be so good after as before they were frozen, but this we may say they will be still eatable, and that will be something saved. If fruit is frozen we cannot do better than cover it down and allow it to thaw gradually; any attempt to thaw it by artificial heat must end in failure. In gathering green vegetables for use in frosty weather the best plan is to gather them two or three days before they are wanted for use, and, placing them in cold water, let them remain in it until they are wanted for use. We fear the frost will play sad havoc with the Roses, especially the Tea and Bourbon classes; here, too, shade and shelter will be found of great service, and some Bracken or straw worked among the branches, and then enveloped in straw, or still better, some water-proof material, such as oiled calico, will be found an immense protection. If such protection be applied before the frost sets in severely, the risk of injury will be considerably reduced. We need scarcely repeat that such things as early Rhododendrons of the scarlet section, and various Coniferæ, of questionable hardiness, will be the better for shade and shelter. One fact more: when the frost goes, do not be in a hurry about pruning your plants, to make them look tidy; leave them until the sap begins to move, and then you will see better where and how to cut. A.

LORANTHUS EUROPEUS AT GLASNEVIN.

Dr. Moore has succeeded in growing this curious plant for the first time in Britain, and reports on it as follows to the Royal Dublin Society:—

To introduce the European Loranthus to Oak trees in the British Islands has long been an important desideratum among botanists, horticulturists, and amateurs. It has, to our knowledge, been tried on several occasions without success; and, so far as we are aware, there is no instance on record of this singular parasitical plant having been seen in a growing state in Britain or Ireland, until we have at last got it established at Glasnevin. To afford those who are not acquainted with this plant some idea of its nature and habits, I shall liken it to the Mistletoe, Viscum album, of which most of us know something. This and the Loranthus belong to the same natural order of plants, and are true parasites. The Mistletoe prefers Pomaceous trees to grow on, but is not exclusively confined to them; and it is rarely found on the Oak, whilst the Loranthus appears chiefly to select the latter as a support and feeder. Those of us who have been much through the southern counties of England know how abundantly the Mistletoe grows among the fruit-tree orchards there, where it not unfrequently gains complete mastery over some trees, and breaks them down by its weight. In Austria and some parts of the south of Europe, the Loranthus prevails similarly among the Oak trees of those countries.

Some twenty years ago a friend of mine, who was well known among amateur horticulturists, the late Mr. Bellenden Ker, visited Ireland, and felt interested with our success in growing the Mistletoe. He then told me he intended to proceed to Vienna, when I begged of him to try and get me some fresh ripe seeds of the Loranthus from the Oak trees of that neighbourhood. After his arrival there, he wrote to me and stated he had seen the parasite, but the seeds were not ripe. He, however, managed to arrange with the late Dr. Schott, Director of the Imperial Botanical Garden at Vienna, to send me some as soon as they ripened, which the latter accordingly did. On their arrival we lost no time in applying them to the bark of Oak trees, similarly as we had succeeded with the Mistletoe on the bark of Apple trees, &c. Our late foreman, Mr. Macardle, put on a number, and I tried a good many myself, some of which continued fresh-looking a whole year, but ultimately fell off without one of them taking root, a result which chagrined both of us very much. When thinking over the matter afterwards, it occurred to me we had probably not taken the right method of applying them, which made me long for another opportunity to try and establish them. This happily offered in 1869, when I met Dr. Fenzl, Professor of Botany to the University, Vienna, at the Botanical Congress, which was held at St. Petersburgh, during that year, and who kindly sent to us the fine example of Loranthus europeus now before you in January 1870, when it was covered with ripe seeds. At the same time he stated that he thought we should not succeed in getting them to grow, as he had never known any instance of the plant having been propagated artificially save once. We, however, set to work with them. Mr. Keit, the propagator, tried a considerable number of the seeds in various ways on Oak trees, and probably I tried as many more myself, and Mr. Parnell, the present foreman, put on a few also. Some were again made to adhere to the exterior of the bark, others were put under its epiphleum, and more under the endophleum, resting on the alburnous wood, but by none of these methods were we successful. It occurred to us to bruise gently the soft bud on a young shoot of the previous year, and insert the seed of the parasite in the centre of the partially bruised bud. By this method two of the seeds grew, one on the common Oak and one on the Turkey Oak, Quercus Cerris. Although the progress of their growth up to the present period has been remarkably slow, it is still sufficient to warrant me in reporting the success of the experiment. The seeds which were put on in January and February, 1870, soon became covered over with thin viscous gelatine, which hardened and appeared like transparent glue, in which state they remained until the spring of 1871, when it fell away, and soon afterwards a few young leaves of the parasite were pushed out from the bark of the Oak branch, thus showing it had taken root. The leaves continued to enlarge until the autumn of the same year, when they were subject to the natural habit of the plant, and dropped off deciduously. In April of last year, 1872, about a dozen leaves of the Loranthus grew at each of the places where those of 1871 had been, and continued healthy all the summer, until the fall of the leaf in autumn, when they again fell off. No branches have yet grown, but there can be no doubt that the parasite has taken vital hold of the trees; and, as I have detailed the method we took to propagate it, we may expect that other experimenters will endeavour to cultivate this curious plant, which, from so small a beginning, may ultimately become of frequent occurrence in the British Isles.

NOTES OF THE WEEK.

—— We learn that the celebrated Jardin Fleuriste, of the city of Paris, which since the war has been in a ruinous condition, is at last to be entirely abolished, and the ground whereon it stood let for building purposes. A few years ago it was one of the most interesting and instructive gardens in existence.

—— We regret that owing to our Index and Portrait Supplement not being strictly in accordance with the postal regulations, a charge of 2d. extra postage was made on each copy of our last issue. Such copies as have been refused on that account we shall be happy to replace, on application.

—— We saw in Mr. Wills's houses at South Kensington the other day two of the finest specimens of Cœlogyne cristata we ever remember to have seen. They were immense plants, 4½ feet in diameter, and were laden with their beautiful white and yellow flowers, which last long in beauty, and which are so suitable for bouquet making and for similar purposes.

—— The value of wild Sweet Violets was never, we imagine, so so much enhanced as on the occasion of the funeral of the Emperor Napoleon III. at Chislehurst. The Violet was universally adopted on the day of the funeral by those present; 6d. and 1s. a bunch was readily obtained by the hawkers, who had heard that Violets would be in demand, and so a good supply was kept up, and some cartloads were gathered and disposed of in a few hours, many cottage families reaping a good harvest by the sale of the sweet-scented Violet.

—— Winter has come at last, and those who have empty icehouses will be enabled to fill them. The ice on the ornamental water at Moor Park on Tuesday last measured an inch and a half in thickness, and Mr. Cunningham informs us that skating has been briskly and safely performed on it. Skating in private grounds has now indeed become so fashionable that gardeners will soon have to be as expert in scraping, sweeping, and flooding ice, so as to keep it in good condition for that use, as they have hitherto been in keeping grass in order for cricket or croquet.

—— Amongst many beautiful Orchids in flower at present, in the nurseries of Messrs. Veitch, of Chelsea, we noticed an excellent plant of Dendrobium crassinode with several pseudo-bulbs well-furnished with flower buds. One of these bulbs measures 2 feet 8 inches in length, and is ornamented with 34 flowers; of Dendrobium heterocarpum, there were also some beautifully flowered specimens, one of which had no fewer than three dozen blooms on one of its pseudo-bulbs. Associated with these was a plant of Dawson's variety of Lælia anceps, bearing a fine spike of lovely creamy white flowers, the lips of which are tipped with purple, and the throat marked with purple and yellow; likewise a plant of the new and beautiful Cypripedium Reichenbachii bearing one flower spike. This fine species has delicate pinkish flowers with side petals or "tails" about 4 inches in length, and produces a great many flowers on the same spike, which blooms and grows at the same time, one only being fully expanded at one time. In this collection we noticed, morever, a plant of Angræcum citratum, bearing two flower spikes, each of which was about a foot and a half in length, and densely furnished with rudimentary buds. In two months time or so, we may therefore expect to see this plant in magnificent condition.

—— A second volume of that fine work on the plants of the East of Europe—Boissier's "Flora orientalis"—is announced as ready for publication.

—— A good memoir of Dr. Welwitsch, the discoverer of the wondrous Welwitschia and many other plants, appears in the January number of the *Journal of Botany*. It is written by Mr. Henry Trimen, and is accompanied by a very good portrait.

—— Another step in the planting of the streets of Brighton with trees has been taken within the last few days. Two lines of fine young Elms (presented by the Earl of Chichester) have been planted on the outer skirts of the central pavement of the Steyne.

—— In the avenue at Torre Abbey, Torquay, there is a Chestnut tree which sends forth its leaves much earlier than any other. This year it is far in advance of any previous season, for already it has scores of leaves fully expanded, and all the leaf-buds are bursting into leaf.

—— We are glad to see that Messrs. E. G. Henderson offer in their new catalogue plants of the best American Blackberries. It may be as well to state that these are entirely distinct from and superior to our own Blackberries, and that they are well deserving of a trial among our small fruits. The kinds offered are the Lawton, Wilson's Early, and Kittaninny, which are known to be the best.

—— Bouvardia flava is now in good bloom at Messrs. E. G. Henderson's Wellington Nurseries, St. John's Wood. It flowers abundantly from all parts of the old bare wood of the past year, and is a most valuable acquisition. It may be readily brought into bloom in winter and early spring by being introduced to a warm house.

—— At a meeting of the Central Horticultural Society of France, M. Vavin recommended a novel mode of treating the Pampas Grass during the winter. This is simply to burn the exterior of the tufts in the end of autumn, and then leave them to themselves. Plants treated in this way, he says, will, in the following spring, push earlier and better than if they had been protected with mats or other coverings.

—— On Sunday week five excellent half-fat West Highland bullocks strayed into the woods from the Harrowstack Farm, in Westmoreland, and ate freely of the Yew trees that grow rankly there. Four have since died, and on being opened large quantities of Yew, undigested, filled the stomachs of all. The other is still unwell, but likely to recover. Large quantities of oil were administered, but without avail, except in the one case.

—— We have all heard more than was pleasant about the adulteration of coffee with chicory. But there is a lower deep. The Inland Revenue Board are "surprised to find" that there is a trade in adulterated chicory. A chicory-roaster has been detected mixing scorched rye with the article which he sells to the dealers as Chicory, and which they, in turn, would, no doubt, mix with and sell to the public as coffee. The roaster admitted that this has been his practice, but said that he was using up his whole remaining stock of adulterants, in order to start on a new system in consequence of the Food Adulteration Act of last Session.

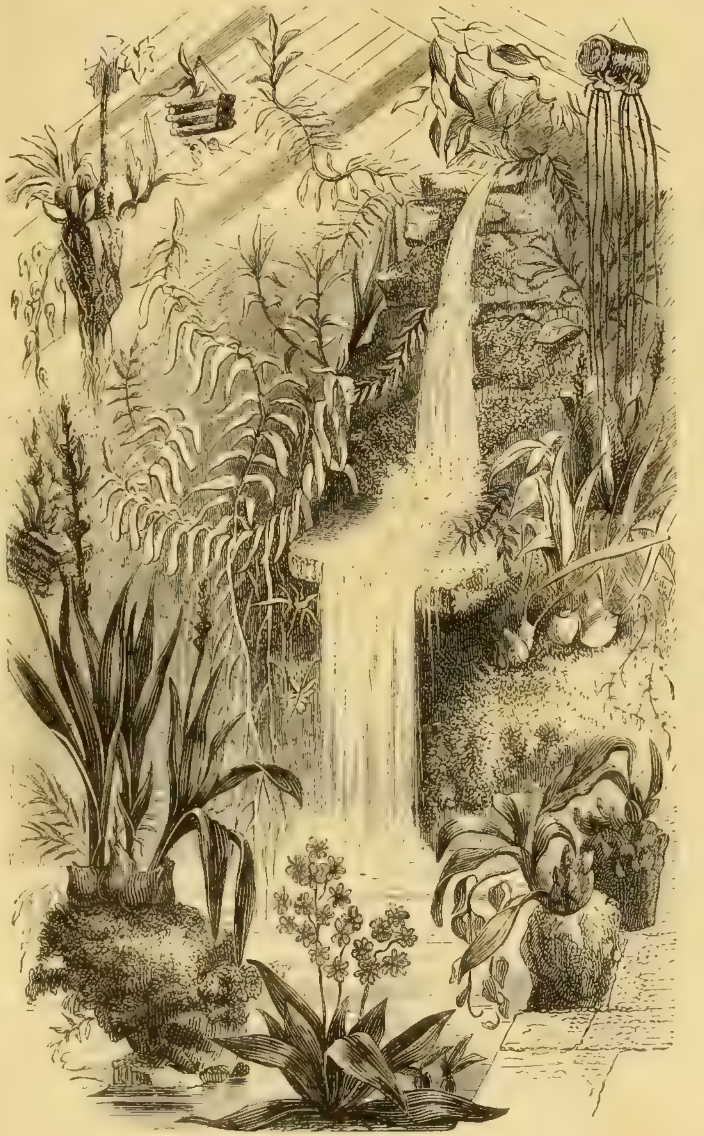
—— It seems that there are not only fashionable flowers, but fashionable vegetables. This, at all events, is the case in Brussels, where some inventive *cordon-bleu* introduced a new vegetable at a Ministerial dinner, which has now become the *cibus divum*. The fruiterer's shops exhibit placards in large type announcing the sale of Oxalis, to which generic name seedsmen, being more scientific, add the special denomination *cremata*. Unfortunately, however, the intrinsic excellence of the Oxalis is not equal to the fame it has acquired by appearing in such high society. It is a plant introduced into France some fifteen years ago, and cultivated in the Jardin des Plantes. It is, gastronomically, a failure, the herbaceous part of it resembling insipid Sorrel, and the bulbous part tasting like a bad Potato. Such a disappointment in the quality of the new plant matters little abroad, where there is a plethora of vegetables, but it suggests a passing remark on the limited nature of our ordinary stock. How seldom do we meet, for instance, with that useful plant Sorrel, with which the Oxalis is disadvantageously compared. Many excellent vegetables are, indeed, known in England, but they do not find their way into our markets in any sufficient quantity, and this is the case with some useful roots, such as Salsify, the neglect of which is not explained by any particular difficulty or expense in its cultivation.

THE INDOOR GARDEN.

ORCHID HOUSES IN THE NATURAL STYLE.

The accompanying sketch of an Orchid house in the natural style gives some idea of the beauty and grace of that fine tribe of plants when judiciously arranged. Still, however beautiful houses arranged in this manner may be made to appear, from an æsthetic point of view I can scarcely hope for their general adoption at present, though even the most enthusiastic admirer of Orchids must admit that our Orchid houses, as at present arranged, are not generally noted for any special beauty or elegance, in any other than a floral sense. Indeed, when the generality of Orchidaceous plants are out of flower, they do not give a tithe of the pleasure that an ordinary observer would derive from a collection of the commonest Ferns or Succulent plants. To the professional Orchid grower or enthusiastic amateur, there is a certain attractive beauty in the strong growths, fresh foliage, or plump pseudo-bulbs, but an ordinary visitor overlooks these minute details, the general effect of the whole only being taken into consideration. Some Orchids, however, have a graceful habit, as Aerides, Vandas, and a few others, but in general they are unattractive when not in bloom. We get a step nearer to natural arrangement, and see a little more of its beauty when we group gracefully-habited Ferns and Palms along with our Orchids. As I have before pointed out, Orchids grow luxuriantly in their native habitats in close contiguity with Ferns, Melastomads, Grasses, and Palms, and it is possible to follow nature to a certain extent in the way of natural arrangement here in our Orchid houses at home. I am quite well aware of the practical difficulties that present themselves to our notice, and know that these in some cases are amply sufficient to preclude the possibility of the natural system being attempted, but there are cases in which this plan may be followed out judiciously, and with the best possible results. Terrestrial Orchids in pots are portable, and more convenient for many reasons than when planted out, though I very much doubt whether they ever grow so luxuriantly as they would if planted out in a suitable structure. In a state of nature Orchids grow with a wild luxuriance quite unknown to us, their aerial roots extending in all directions in quest of food and moisture; and they would grow more vigorously in our plant houses if planted out in suitable composts, though, as a matter of course, this plan could only be adopted in places where there was no probability of their having to be removed. All Orchids are not adapted for planting out, but there are some that are specially amenable to this course of treatment, and in this respect cultivators should be judicious, only selecting such plants as are likely to succeed and give satisfaction. There are several beautiful Ferneries arranged in the natural style in this country, with fountains and little trickling brooks bordered by moist banks of sphagnum and turf, and to these the addition of a few Orchids would be a marked improvement. A moist, spongy bank partially shaded in such a structure would be just the situation in which to plant out the glorious Disa grandiflora, and to grow it in perfection. It has grown and flowered out-of-doors during the summer months in this country, but the chances of success would be far greater under the above conditions than when subjected to either the vcissitudes of our climate or to having its eager roots cramped within the circumference of an earthenware pan. Give it a chance on one of these moist banks, where its roots can ramify in all directions, and its fresh vigorous foliage will bid defiance to thrips or red spider, and it will form an object of beauty not easily excelled. There are other terrestrial Orchids admirably adapted for planting out, such as the evergreen Calanthes, Phajus and Sobralias. Phajus grandifolius and P. Wallichii would soon establish themselves and make noble specimens, being gross feeders and very abundant bloomers. The golden-flowered Cyrtopera flava and many other terrestrial Orchids from India, South America, and the Cape, might be grown in perfection if planted out in suitable situations, since it is almost impossible to do justice to them when grown in pots. Our illustration, which represents an Orchid-house arranged in a picturesque manner, shows what the idea is when properly carried out. The pipe carrying the water for the cascade passes round the boiler. The plants have a graceful appearance, and the *tout ensemble* is considerably heightened by the little cascade tumbling from the partly hidden rockwork. It is easy to recognise such plants as Peristeria elata (Dove plant), some species of Oncidium and Cycnoches Loddigesii in the foreground, while Cœlia macrostachya, Scuticaria Steelii, Renanthera coccinea, Vanilla planifolia, and a Stanhopea or two complete the group. The water below might have been utilized by the culture of some of the smaller Nymphæas, or other aquatic plants. In houses of this kind suitable openings could be left in the rockwork, so as to introduce pots containing flowering plants as they come into bloom; and by adopting this system, a naturally arranged house might always be kept gay with choice exotics, while Ferns, Selaginellas, and Mosses, together with a few trailing plants, would form an appropriate background to the delicate colours of the fragrant flowers.

F. W. B.



Orchid House in the natural style.

PAULLINIA THALICTRIFOLIA.

This is one of the most beautiful of recently introduced plants, and one that cannot fail to become a favourite. It is a native of the southern Brazils, whence it was introduced by Mr. Bowman to the nurseries of Messrs. Veitch & Sons, of Chelsea. In general appearance it is not unlike a minutely cut leaved Adiantum, and, indeed, so much does it resemble a Fern that it might easily be mistaken for one. It, however, is in reality a hardwooded plant belonging to the Order Sapindaceæ. The leaves are of a rich shade of green, and as the specific name implies, they closely resemble in shape those of some species of dwarf Thalictrum. The young branches are clothed with a velvety down of a greenish-chocolate colour, and the woody stems are also tinged with brown. The true habit of the plant is semi-scandent, a character which it always assumes in its native country, where, as the plants become aged, they lose that compactness of growth so necessary to their attractiveness in this country, and become coarse and straggling. The graceful appearance which they have when in a young state is admirably represented in the accompanying illustration (see p. 87). If only required for decorative purposes there should be no inclination to make the plants produce flowers, which are inconspicuous; therefore the main object should be to have plenty of healthy foliage. To secure this, the plant should be grown in stove temperature, and if one part of the stove is more adapted to its growth than another, it is the dampest part. After this plant came into the possession of Messrs. Veitch, and before its true value became known, some plants of it were placed in a corner of an old very damp stove pit, in which position they grew wonderfully strong, and quite surpassed in vigour and beauty those that were, as was then supposed, placed under more advantageous circumstances, *i.e.*, in drier and lighter parts of other houses. Care is therefore now taken to keep them where abundant atmospheric moisture can be supplied, and for this purpose they are in some cases plunged amongst Sphagnum, and in others the pots are set on shelves that are overlaid with an inch or two of the same material, which is constantly kept moist by being sprinkled with the syringe. This plant may be grown to train on a small trellis or to affix to short rafters, but the best mode is to grow it so as to form little well foliaged specimens. A compost consisting of two parts good substantial peat and one of loam, together with some silver sand, suits it admirably. W. F.

CANTUA DEPENDENS.

If any of your readers have ever flowered this plant under pot cultivation, they have certainly been more fortunate than the majority of cultivators. When first introduced by Messrs. Veitch & Son, then of Exeter, blooming examples were shown at a meeting of the Horticultural Society in Regent Street and Chiswick in pots securely mossed down; and therefore, as the whole of the great plant growers of that time failed to bloom the plant, I have reason to infer that the specimens exhibited were cut from a specimen planted out which was known to bloom annually in the Exeter establishment. I well recollect the anxiety with which I waited for and welcomed the plant when first distributed, thinking, or rather believing, we were about to receive something that would form a gem of the first water, even in the most select collection of stove or greenhouse plants. But I was doomed to disappointment; the plant grew freely enough, and made handsome specimens, but the harvest of bloom which I expected to reward my trouble never presented itself. Every scheme to induce the blooming principle failed, not only with one, but with, I may say, every grower in the country. Disheartened, the plant was consigned to the rubbish heap among the outcasts, and I ceased to think of it from that time until very recently, except as being worthless. In the spring of last year I was invited to visit the garden of Mr. Marriott, Cropwell Butler, near Nottingham, when, in looking through the conservatory I observed a blaze of gay flowers, depending from standard plants each about 4 feet high, splendid racemes, or rather corymbs, of tubular flowers, each 3 or 4 inches long, bright crimson with an orange violet throat. I knew the plant perfectly, but was some time before I could call its name to mind. I had seen it blooming when planted in the conservatory against a sunny wall or pillar, but, as far as I can learn, Mr. Marriott's is the only garden in which the plant has bloomed successfully year after year. Nor is there any mystery in its treatment. The plants, though 3 to 4 feet high, were growing in 8-inch or 10-inch pots, in common loam and leaf-mould; and, rather than bearing evidence of luxurious treatment, they wore a somewhat neglected appearance. This was the key to their successful treatment; for, upon inquiry, I found that the plants, after they had done blooming—and, be it remembered, they flower for several months, say from April to the end of June, according to the temperature in which they may be kept—were dried off for a short time, and then cut close in; that is, the shoots which were made last year, and which will bloom this spring, will be cut back, after they have ceased blooming, to within two or three joints of the wood from which they started. After they had broken in the greenhouse and been hardened, they were placed in front of a south wall in the full sun, liberally supplied with water during the early growing season, and then subjected to autumn treatment, with a limited but sufficient supply of water, which had the effect of securing the thorough maturation of the wood. I am glad to record this much of one of Flora's most beautiful productions, because, the principles of cultivation being understood, a little neglect will not kill it, and consequently any intelligent amateur may grow it in perfection. To convey an idea of the beauty of this plant, I may say to those who have seen Fuchsia corymbiflora or fulgens blooming in their best form, that the Cantua produces its flowers in the same manner, the depending spike and spikelets frequently being a foot in length. To conceive anything more brilliantly striking than a finely-bloomed plant of this would be difficult.

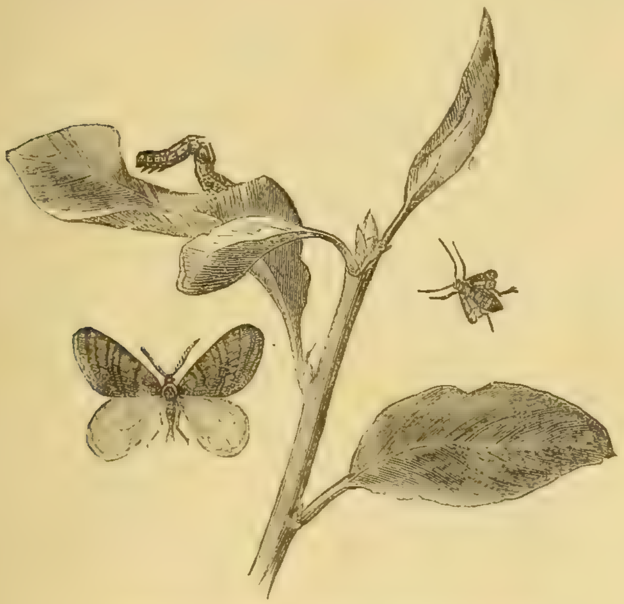
Passing to cultural particulars, the Cantuas are propagated readily by cuttings of the partly ripened wood in the growing season. These must be prepared in the usual manner, and put in sandy soil under a bell glass. For the first two or three weeks, until they are callused, the cuttings must be subjected to cool treatment; but after the callus has formed, the pots may be placed in a gentle bottom heat, and a temperature of 55° to 65°, when the roots will protrude, and the cuttings will start into active growth. Allow them to grow for a week or two to gain strength, then pinch off the tops, and as soon as side shoots are produced, pot them in small pots, taking care to check them as little as possible. Retain the young plants in the same temperature until they are established, and then gradually inure them to the greenhouse. Presuming the cuttings to be rooted immediately, I should endeavour to get them so strong, and thoroughly established by the end of June that when cut boldly back they would show up five, eight, or more branches. I would then shift the strongest plants into 6-inch pots, the others into smaller ones; protect them for a fortnight until fresh roots are made, and gradually inuring, place them in the full sun. From each plant I should endeavour to carry up as many equally balanced shoots as I could get, not stopping them, but allowing them to attain their full stature. Carefully supplying water through September and October—giving sufficient to sustain healthy root action, but not more—I should expect the plants to produce bloom in the following season. This, however, would be but preliminary treatment, as it would be after the second and future seasons that I should expect the full and complete development of the plants. After pruning, and when the plants have broken into growth in the second season, repot them from the 6-inch into 8-inch pots, and continue this kind of small shift every season. Place them in the hottest and most sunny part of the garden, turning them weekly to keep the sides equal. When the pots are full of roots, assist the plants by waterings of weak liquid manure during the early growth of the shoots, and then make sure of thorough maturation by gradually withdrawing the supply. In this way success in blooming may be considered certain. The best soil may well consist of three parts rich fibrous loam, with a fourth part of leaf-mould, and sufficient small charcoal or broken oyster shells and gritty sand to make the whole healthy and workable. Pot firmly, and the result must be certain. The plant is subject to red spider, thrips, and fly, but syringings with soap, sulphur, and tobacco water will destroy all these. A.

GARDEN DESTROYERS.

THE WINTER MOTH.

(CHEIMATOBIA BRUMATA.)

This is one of the most injurious insects to fruit trees that we have in this country. In many points in its structure and habits it is very similar to the Lime-looper (Hybernia defoliaria), as in it the female is nearly wingless. Like it, it is a winter insect, the perfect moth only appearing in October, November, and December. The males come out first, and sit quietly during the day in some concealed place; but come flying out at night seeking the female, whom they generally find sitting at rest on the stem of a tree. Like the Lime-looper, too, it undergoes its metarmorphosis in the ground, and when the perfect insect emerges from the chrysalis, the female has to creep up the trees to lay her eggs near the place where the larvæ will find their food. She lays them singly on the buds, or in their vicinity, or on the back of the twigs and branches, or in crevices in the bark. They are glued firmly on, and, although laid in November and December, and left exposed to the severity of winter, they remain uninjured until next spring, when they come out about the beginning of April. The eggs are at first light greenish, but gradually become darker, passing through the stages of orange and olive, until at last they become brown. They are usually hatched about the same time that the buds expand; but not always, for it happens at times that they come out before the buds, in which case their instinct leads them to attack the unopened buds, and to eat their way into the heart. When the bud is half expanded, the small young caterpillar makes a fine web between the calyx and the petals of the flower buds, or between the leaves of the leaf buds, within which they lie concealed and protected, so that it is very difficult to observe them. When the leaves are expanded a little later, the caterpillars make a sort of nest or tent, composed of two or three leaves tied or glued together, and it is the way in which the buds, whether flower or leaf-buds, are glued together so as to be prevented from expanding properly that most readily betrays their presence. When the fruit is formed, they also attack it, and they consume it almost entirely. It has the same habit as the Lime-looper of hanging, swinging by a short thread from the leaves. At first its colour is grey, but ere long it usually changes into green. Examined more closely, a darkish stripe is to be seen running down the middle of the back, and three (or sometimes four) narrow white stripes down each side; but these markings are not conspicuous. A superficial observer would call the caterpillar green, but the colour varies in different individuals; sometimes, instead of green, it is olive-brown, or even blackish brown. It takes about a month or six weeks to feed to maturity; so that it is usually full fed in the month of May, when it descends to the ground and buries itself a little under it, and there passes into the chrysalis, which is reddish brown. The moth does not always appear in winter; sometimes it remains in the pupa state until spring, and only lays its eggs then, which of course do not come out so soon as those laid in November. The perfect moth, male and female, is figured of the size of nature in the accompanying woodcut. The male has the fore wings of an ash-grey colour, with darker waved bars, and the hind wings pale. The female is of the same colour as the male (perhaps a trifle darker); but her wings are very short, and not adapted to flight. She runs about, however, with considerable activity.



Cheimatobia brumata.—Male and female, natural size.

This moth feeds on all kinds of trees, and of course, where fruit trees are, they suffer likewise, but they are certainly not more exposed to its attacks than other trees. It is, however, chiefly in connection with them that we have our attention drawn to this moth, and the reason is obvious. The caterpillar attacks the flower-bud, and it is usually only in fruit trees that we care much whether the flower-buds are meddled with or not. A Hornbeam may have all its flower-buds destroyed by it without our noticing it, or at least distressing ourselves about it; but touch our fruit buds, and that is quite another affair. In all fruit districts, therefore, and more particularly in our cider counties, the winter moth is a very important personage. We have already, under the head of Hybernia defoliaria, mentioned the precautions which have been successfully adopted against it. The same means apply to this species. Smear the stems of the trees in the end of October, the month of November, and the beginning of December, with a broad band near the ground of a sticky mixture composed of tar and cart grease in equal proportions. Across this band the females cannot pass. They become entangled in it, cannot escape, and are detained until they die. The mixture retains its adhesive properties for several days, but the operator must be cautious to renew it before it has lost them; and as to this he must satisfy himself by constant inspection. It is well to begin protecting the trees before the moths appear, but if this be thought unnecessary, the stems of the trees should be examined by lantern-light every night after the middle of October; and as soon as the presence of the moth is noted, a ring of the sticky material should be daubed round the stem. Mr. Newman ("British Moths") thus enforces this advice. From the 20th of October to the 20th of December, (says he), the gardener should examine his plantation every evening with candle and lantern, and destroy by hand all the moths within reach. The couples are mostly on the stem, or within reach, and very visible. If he finds the moths numerous—and sometimes they are (the men say) as thick as bees—he should, the following day, daub his trees with a ring of this composition round the stem or branches in the most convenient places, taking care to leave no other path to the tree, such as side shoots, or contact with the branches of other trees, for the ascent of the female. By these means hundreds—nay thousands—of females have been destroyed on a single plantation in one night; and as each female is calculated to lay two hundred eggs, the destruction of caterpillars for the following season is very great. The daub must be renewed every few days, and the trees should be well shaken when it is applied, to dislodge, as far as possible, any female moths that are in them. The composition loses its stickiness in frosty weather, but the moths do not then come abroad. Prof. Westwood has recommended bird-lime instead of the tarry mixture, as requiring less frequent renewal; but this is much more costly and difficult to procure. Mr. Newman also wisely recommends that where this moth is prevalent, the pruning of fruit trees should be delayed until after Christmas, that a portion of the eggs may possibly be carried away with the prunings, and these should be burned.

The titmice and other small birds do much service in searching the buds for the young larvæ. They have, indeed, been said also to destroy many sound buds in their search for them; but even assuming this to be true (which we do not admit to any great extent) the good they do much more than counterbalances the attendant evil. A. M.

THE PROPAGATOR.

INFLUENCE OF FOREIGN POLLEN ON FRUIT.

BY C. J. MAXIMOWICZ.

It is universally admitted that, in the fertilization of an organism with the pollen or farina of another species, the influence of the foreign pollen or farina on the offspring produced is very distinctly observable. But the cases where this influence has previously shown itself in the mother plant, in a change of form, colour, or size, in the fruit produced, have been hitherto exceedingly rare. The few instances may be found collected in Gaertner or Darwin. Thus Manz asserts that he observed different kinds of fruit on a Pear tree, of which a number of blossoms had been castrated, and, as he supposed, fertilized afterwards by neighbouring trees. Pavis maintained that the fruit of Apples, Melons,[*] and Maize underwent alteration in form, colour, and special qualities when they were planted near other kinds. Bradley even says that he had seen an Apple which was sweet on one side and sour on the other, and one half of which became soft when boiled, while the other remained hard. But these are only observations and not experimental results. Wiegmann first obtained the latter in Peas. Gaertner tested experimentally many of the statements which we have quoted, and made experiments on other plants besides. He was only able, however, to confirm Wiegmann's results to a certain extent. He is therefore disposed (and with much reason) to attribute the majority of such cases to variation in the individual; he allows, however, as a rare exception, the possibility of change even in the mother plant itself. Other observers (as, for example, Knight, and recently Nägeli) deny even the possibility of such an influence. More recently Darwin has again quoted cases where, by crossing yellow and dark Maize, cobs were produced which contained both yellow and dark grains. Hildebrand confirms these observations, and further cites the instance of an Apple which bore traces in its marking of the influence of another sort. But whilst the question has been in these cases only a variation in the colour, in the three which follow we find it affecting the form. Hartsen has seen on Solanum edule (the well-known Egg-plant) a fruit which in colour, size, and shape exactly resembled a Tomato, and possessed only the greater dryness and firmness of the flesh of the Egg fruit, besides the smooth border of the seed, which in the Tomato is villous. Dr. Kanitz met with a case of a hybrid fruit, between Lycopersicum esculentum and Capsicum annuum. Fritz Müller fertilized Cattleya Leopoldi with Epidendrum cinnabarinum, and obtained seeds of the former with the shape belonging to the latter. Meehan, lastly, observed that the bough of a Pear tree, which had always been altogether unfruitful, projected into the boughs of a neighbouring Apple tree. Fruits were produced which in skin and flesh were altogether Apples, and had only the seeds, carpellary partitions, and stalk of the Pear.

These are all the cases with which I am acquainted. Considering, then, that the observations of Bradley, which are the earliest, date from the year 1721, and that the list has only increased very slowly, notwithstanding the vast opportunities for noticing these cases which botanists and gardeners have had in crossing different species of plants, we must allow that Gaertner was quite justified in declaring that the immediate influence of foreign pollen upon the mother plant is a rare exception. If we agree with Gaertner in excluding from the list, as possibly due only to bud-variation, those cases which are not the result of direct experiment, the only well-established ones which remain are those of Maize, Peas, and Cattleya Leopoldi. The amount of evidence being so limited, it has seemed desirable to me to publish a case from my own observation, where, two species being reciprocally cross-fertilized, the influence of the foreign pollen upon the fruit fertilized by it has been distinctly recognizable. During the last summer I cultivated indoors a number of species of Lilium, in order to study their specific distinctions. They all came into bloom early, and before those in the open ground. My house being surrounded by high trees for some distance, and there being no other cultivation of Lilies in the neighbourhood, no question could arise as to the influence of foreign pollen. Moreover, my Lilies did not come into bloom simultaneously, but one after the other. The capsules being far from well known in all the species, I fertilized the flowers (with which I was better acquainted) as they expanded themselves. I did this when possible with the pollen of their own species, but of a different individual, or, failing this, with the flower's own pollen. The latter was the most frequent; yet the capsule was fully developed in most cases, although it contained fewer seeds; it is well known, however, that in the Liliaceæ self-fertilization is reputed to be more successful than in other families.[†]

Lilium davuricum, Gawler (L. spectabile, Link), and L. bulbiferum, L., the two species which are the subject of this paper, were amongst the earliest which flowered with me. Both are described by numerous recent authors as forms of one and the same species[*] They admit, however, of being distinguished from one another by differences which lie in organs the study of which in the genus Lilium has hitherto been very much neglected, namely the bulb and the fruit. The bulb of L. bulbiferum is firm and compact, and composed of numerous pointed scales closely and tightly packed in many rows. The outer scales are attached by their broadest part, and are gradually attenuated to a point; the inner scales are slightly contracted above the base, and are widened out again towards the apex. Taking in the hand for comparison a bulb of L. davuricum, its loose structure immediately strikes us with surprise; it allows mere pressure to crush the whole bulb into separate scales. These are smaller and are curved away from one another, so that the arrangement is imbricated, and the scales can be distinctly counted, while in the former species only the points of the inner scales are visible.

The author describes minutely the form of the scales. Even the outermost exhibit above the base a distinct contraction; in the next row this becomes so evident that the scale appears to have a stalk. If, however, a young bulb, such as occasionally forms itself in a scale-axil at the base of the previous year's stem, is examined, the outermost scales are simply ovate without any trace of a contraction above the base. These are probably absent from the old bulbs through decay. Although a contraction of the inner scales above the base takes place even in L. bulbiferum, it is very different from the constriction in L. davuricum, which further inwards in the bulb assumes more and more the character of an articulation. The scales break off at the constricted point very readily and smoothly. The constriction runs quite round the scales; and occasionally broods of small bulbs break out on the broken off scales at the articulation. From what has been said, the difference in the structure of the bulb in the two species becomes sufficiently evident. It has, in fact, long been known to gardeners, who amongst hundreds of bulbs can pick out those of L. davuricum with the greatest certainty.[†]

Scarcely less distinct are the differences of both species in the capsules; and as they readily produce fruit, it has been already repeatedly described.[‡] The capsule of L. bulbiferum is long and narrow, almost cylindrical, 6-grooved, and the top deeply umbilicate, because each cell projects in an elevated point-like knob. The seeds have a very narrow wing: "seminum discus ala octuplo latior," says Lallemant. The capsule of L. davuricum is shorter and broader, nearly obovate, 6-grooved, and the top flat and almost truncate, from the cells being shortly rounded off. The seeds have a very broad wing, almost half the width of the seed. Both species also afford good distinctions in the floccose hairiness of the long-pointed leaves, and the externally pubescent flowers of L. davuricum, contrasted with the absence of hairs, the lanceolate pointed leaves, and the externally glabrous flowers of L. bulbiferum. These characters, however, are often insufficient to diagnose the species, because in gardens so many forms present themselves (possibly originated through hybridisation) that one may often be in doubt as to the species in the absence of bulb or capsule to settle the matter.[§]

As I believed I had noticed that in L. bulbiferum the scales of different bulbs sometimes exhibited a very indistinct contraction above the base, while sometimes it was distinct, it occurred to me whether in the last case I might not have had a hybrid between this species and L. davuricum. I fertilized therefore a flower of L. bulbiferum with the pollen of L. davuricum, and a flower of this with the pollen of the first. This was the only fertilization effected, because these individuals bore only a single flower each, and I neglected the operation in the case of others. The ovaries of both species swelled up and developed. But after the capsule of L. davuricum had become about 2 inches long and 5 lines in diameter, it ceased further growth and dried up. It had, however, sufficiently developed itself to show the characteristic form of the capsule of L.

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[*] Livingstone states (and the incident has not, I think, been quoted) that in the case of Citrullus vulgaris, Schrad., which varies with sweet and bitter fruit, "Melons in a garden may be made bitter by a few bitter Kengwe in the vicinity. The bees convey the pollen from one to the other." (Travels in S. Africa, p. 49.)

[†] With L. tigrinum alone I have failed in producing fruit even in the open air, and after cross-fertilizing numerous individuals. The reason was, perhaps, because I neglected at first to break off the small axillary bulbs; and afterwards it had become too late in the autumn.

[*] Asa Gray, Mem. Amer. Acad. n. s. vi. p. 415; Miquel, Proc. Fl. Jap. 320; very recently, again, Baker's new synopsis of the genus Lilium, Gard. Chron., 1871, p. 1034. Miquel separates the two plants in the Ann. Mus. Lug. Bat. iii. 156; Baker also keeps them apart as sub-species, relying upon the absence of axillary bulbs in L. davuricum as the main distinction.

[†] L. avenaceum, Fisch., exhibits a similar appearance of articulation (see my diagnosis and the figure in Regel's Gartenflora, 1865, p. 290, t. 485). Compare also, and on other structural distinctions of Lily-bulbs, my essay on the Lilies of Japan in the Arbeiten des kais. Bot. Gartens.

[‡] See the excellent essay of Lallemant in the Index sextus Sem. Horti botan. Petrop. 1839, pp. 54, 58. For the capsule of L. davuricum see Glehn. Supp. ad Ind. Sem. H. Petrop. 1868, p. 19 (under L. spectabile). For a figure, Trautvetter, Fl. Ross. Ill. t. 19. f. g.

[§] Baker, in fact, describes L. bulbiferum proper as having the stem, especially in the upper part, clothed with scattered pubescence, and the perianth slightly cottony externally, while in L. davuricum the stem is nearly smooth.

bulbiferum, the male parent. On the other hand the capsule of L. bulbiferum grew and ripened, and was not cut off till it had dehisced; it had completely the character of the male parent—that is, of L. davuricum.

Both species, then, had so completely changed their capsules, that, having forgotten to which the long and deeply umbilicate, and the short and flat one belonged, I did not observe the wonderful state of the case till I was about to incorporate the *corpus delicti* into the herbarium, and compared it previously with descriptions and other fruit-specimens. This inattention of mine was very blameable, because, believing the other capsule which did not complete its growth of no value, I allowed it to drop. The developed capsule I have carefully preserved: it contains about 130 seeds; a few, not exceeding a dozen, may have been lost. The breadth of the wing was about the mean of what it is in the two parents; it varied from one-third to one-sixth of the breadth of the seed. About fifty of the seeds were abortive; about seventy were well developed, of the normal size of the seeds of these species (8 mm. long, 5 mm. broad), and supplied with an apparently well developed embryo, the characteristic slightly curved, longish, linear form of which was readily recognised by transmitted light.

I would not attach any great importance to the seeds having a middle form between that of the two parents, because the sizes hardly allow themselves to be expressed with the exactness which Lallemant assigns them. The wing of the seed may be bent round or compressed towards the border, and in measuring the breadth of the wing this compression cannot be taken into account. What objections can be advanced against the case which I have just related? I can foresee the following:—

First of all, some one may say that the whole observation rests upon one fundamental error, an interchange, and so forth. The circumstantial explanation I have given above, I hope, speaks for itself. An obstinate doubter I can only invite to imitate the experiment, and in the event of its not succeeding, to bear in mind that Gaertner was unsuccessful in confirming the observations of Pavis, while Savi, Hildebrand, and others succeeded. I should like to invite all who are interested to repeat my experiments, since probably by that means the second objection might be weakened—namely, that this is a solitary case, which proves nothing, and that it is an accidental sportive variation. Other researches will probably prevent me following further observations of this kind myself. The weightiest objection would be this, that the L. bulbiferum with which I experimented was already itself a hybrid, that this was the explanation of its fertilization by one of its parents turning out so successfully, and that it probably, independently of this, possessed (owing to its hybrid origin) the capsule which is peculiar to L. davuricum. That this is probable I have already shown in describing the bulbs; and I do not know what form its capsule would have had if it had been fertilized with its own pollen or that of a genuine individual, inasmuch as the capsule which I obtained through the crossing described is the only one belonging to it with which I am acquainted.*

That the capsule of the indubitably true L. davuricum did not develop itself to ripeness, might be urged likewise in support of this objection. Whether the L. bulbiferum was a mongrel, can only be ascertained by experiments with plants known to be true. But the fact that L. davuricum, the purity of whose pedigree cannot be doubted, had a capsule of the form of that of L. bulbiferum, seems to me to best meet the objection, and to show that in this case the influence of the pollen on the fruit stands established.—*J. Roy. Hort. Soc.*

Paullinia Thalictrifolia (see p. 84).

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* The only example of the fruit of L. bulbiferum in the Kew Herbarium is one from Corsica collected by Mabille. This, Mr. Baker assures me, is indubitably the true plant. The capsule, however, almost precisely accords with that attributed to L. davuricum. This, so far, weakens the case as far as L. bulbiferum is concerned, and confirms what the author himself states above; it leaves, however, matters unaffected with respect to L. davuricum.

THE FRUIT GARDEN.

REQUISITES FOR PEAR CULTURE.

The following inquiry has been made by a landowner who proposes to plant a large Pear orchard for marketing, viz.: "What points must I attend to to avoid failure, which so many have met with?" In answer, we would say that the first requisite is

Experience.—We may learn a great deal from advice and directions, but after all, a certain amount of experience is absolutely essential. Different localities, soils, aspects &c., may require different treatment, and these modifying influences can be fully understood only by a certain amount of practical observation: We may get much of this from our neighbours, if they have made the trial, and so obtain the advantage of their losses and gains at their expense. If Pear trees have failed in a certain neighbourhood, under all kinds of management, the prospect is not encouraging, and yet there may be detrimental influences capable of being removed. But it would not be advisable to plant largely in such a place until a full trial should promise success. We will proceed to point out more in detail what are usually found essential requisites.

Soil.—This may vary greatly in appearance, and yet grow good Pears. We have never seen better than where grown on trees standing in sandy soils in one locality, and in strong clay in another. Actual trial must test the question. But the soil must have thorough natural or artificial drainage. We cannot expect a good orchard where water remains several weeks in spring a foot or two below the surface. If holes dug 2 feet deep for the purpose early in spring will hold it several days, Pear trees will be a doubtful experiment, unless thorough underdrainage is resorted to.

Cultivation.—Soils vary greatly in fertility, and the amount of cultivation must depend on circumstances. The true guide is to observe the annual growth, which, on bearing trees, should not exceed 2 feet. As trees become old, 1 foot will indicate sufficient vigour. On dwarf Pears, kept highly cultivated and manured, as they always should be, and sufficiently pruned, a more rapid growth would be proper. The healthiest trees are those of medium growth, not so much enriched as to cause canker, nor so feeble as to give small and poor growth.

Pruning must also vary with circumstances. All dwarf trees need frequent pruning, to keep the tree in symmetrical shape, to prevent it from becoming stunted by too great a mass of fruit spurs, to equalise the vigour over the whole, and to give good large fruit instead of a quantity of small rubbish. To impart vigour to the growth, the pruning should be done before the buds swell.

Thinning the Fruit.—This is of greater importance than many suppose, and is not sufficiently attended to. Overcrops have two bad results. They exhaust the tree, and the fruit is poor in quality. When thinned, the Pears are larger in size, better in quality, and sell for much higher prices. A neighbour, last season, had one-half of his Pears picked off when small from a part of his trees, and another part was left unthinned. The Pears on the thinned trees grew so much larger that they actually exceeded in bushels those on the unthinned trees, and he said it would have been better had he taken off two-thirds of the number. The objection that the thinning increases the labour and expense is imaginary, for it is easier to pick off Pears when small than afterwards, and a few large specimens remaining are more rapidly gathered than many of inferior size.

Selection of Varieties.—In making a selection of sorts for a market orchard, two requisites must be attended to. They should be good in quality, and they must be popular. Private growers may please themselves, but the market grower must not only grow good kinds, but those that are certain to be in demand in the market.—*Cultivator.*

FRUIT CULTURE IN CALIFORNIA.

Mr. Nordhoff has, in his new book on California, an interesting chapter on the cultivation of fruit in that country, which has been attended with a degree of success that seems almost incredible. The Orange, Almond, Olive, Lemon, Citron, Lime, and English Walnut are the fruits to which attention has been specially directed for some years in the southern counties, although they grow in many other parts of the State. The Almond begins to bear at three years from the bud, and at five years will yield 12 lbs. to the tree, or 1,200 lbs. to the acre, which at twenty cents a pound would give 240 dollars an acre. They bear for several years, and at eight years may be reckoned on for 20 lbs. to the tree, which would give 400 dollars to the acre. The Almonds fall to the ground when they are ripe; the husk is easily picked off; and as the harvest-time is dry, the shells are bright and clean. The Olive grows slowly at first, beginning to bear at four years, but does not yield a full crop until the tenth or twelfth year. It then returns on an average for the orchard about twenty-five gallons of Olives for each tree. It is more profitable to make the fruit into oil than to pickle it. From five to seven gallons of ripe Olives go to one gallon of oil. The Citron, which bears in four or five years, is also a profitable crop. It is a straggling tall shrub; three of them in Los Angeles, bore, at four years, without special care last year, 45 dollars worth of fruit. The Lemon, which becomes a stately far-spreading tree, bears in ten years a valuable crop. It is not yet planted in orchards to a great extent; one tree, ten years old, which I saw in Los Angeles, yielded 600 Lemons; one fifteen years old, bore 2,000 Lemons, which fetch in San Francisco 30 dollars per 1,000.

ORANGE CULTURE.

Last I come to the Orange. "All these trees do well, and are profitable," said an Orange cultivator to me; "but they don't compare with the Orange; when you have a bearing Orange orchard, it is like finding money in the street." Los Angeles is, at present, the centre of the Orange culture in this State. The tree grows well in all Southern California, wherever water can be had for irrigation. It does best nearest the mountains, among the foot-hills, probably because it there gets a more uniform temperature; and I think I have noticed in orchards at Los Angeles, San Gabriel, and near San Bernardino, that it is grateful for such protection as house, outbuildings, or hedges give it from severe winds. At Los Angeles the frosts are sometimes severe enough to nip the tender leaves of the young plants, and on the plain near San Bernardino I found that year-old plants were protected with some slight covering during the past winter, which everybody tells me has been uncommonly hard. Sixty Orange trees are commonly planted to the acre. They may be safely transplanted at three or even four years, if care is used to keep the air from the roots. They grow from seed; and it is believed in California that grafting does not change or improve the fruit. It begins to bear in from six to eight years from the seed, and yields a crop for market at ten years. With good thorough culture and irrigation, it is a healthy tree; if it is neglected, or if the "Gopher" has gnawed its roots, the scale insect appears; but a diseased tree is very rarely seen in the orchard. It is in California, as elsewhere, a tremendous bearer. At Los Angeles I saw two trees in an orchard, one seventeen years old, from which 2,800 Oranges had been picked, and it still contained a few; the other, three years younger, had yielded 2,000 Oranges. At from ten to twelve years from the seed the tree usually bears 1,000 Oranges, and they are selling now in San Francisco for from 15 dollars to 35 dollars per 1,000.

I have satisfied myself, by examination of nearly all the bearing orchards in the southern counties, and by comparing the evidence of their owners, that at fifteen years from the seed, or twelve years from the planting of three-year-old trees, an Orange orchard which has been faithfully cared for, and is favourably situated, will bear an average of 1,000 Oranges to the tree. This would give, at twenty dollars per 1,000, a low average—a product of 1,200 dollars per acre. One man can care for twenty acres of such an orchard; and every other expense, including picking, boxes, shipping, and commissions in San Francisco, is covered by five dollars per 1,000. The net profit per acre would, therefore, be a trifle less than 900 dollars. To show that this is not an over-statement, I will tell you that I have been in an orchard of less than nine acres, which has produced for its owner for several years in succession a clear profit of over 8,000 dollars. An orchard of forty acres in Los Angeles is reported to me to bring a clear rent of 15,000 dollars per annum; and the lessee is believed to have made a fortune for himself. You will probably believe, after all, that I have exaggerated the profits of this business, but the Orange-growers of Los Angeles will smile at the extreme moderation of my statement. "People tell large stories about Oranges," said one such man to me; "but the truth is big enough —at ten or twelve years trees may be safely counted on to average ten dollars each, clear profit, with sixty trees to an acre, and that is big enough for anybody." And thereupon this Orange-grower proceeded to show me the accounts of one little orchard of his own, which so greatly exceeded his moderate statement that I shall not give you the figures. After ten years the tree rapidly and steadily increases in fruitfulness; the older trees in the orchards are now bearing, so every owner assured me, very little less than 2,000 Oranges to the tree. The best cultivators do not prune the tree at all; but in all the orchards willow poles are used to prop up the overladen branches. Near Los Angeles, at the Mission San Gabriel, there are two large and fine places, those of Mr. Wilson, State Senator from this district, and Mr. Rose. Both are able men, and careful horticulturists. Of Mr. Rose's place, as a model of its kind, I will give you a few particulars, which will bring before your eyes the manner and extent to which fruit culture is practised here. Mr. Rose has 2,000 acres of fine, fair-lying land, well watered, so that he can irrigate the whole of it. 1,200 acres are under fence, and in cultivation and pasture. He raises, as field crops, Barley, Wheat, and Oats, and keeps a large range for a valuable herd of mares and colts. His orchard consists of 400 young but good bearing Orange trees, 4,000 not bearing, and 2,000 more now being planted; 500 Lemons, of which 50 are in bearing; 135,000 Vines, from which he made 100,000 gallons of white wine [and 3,000 gallons of brandy, last year; 350 English Walnuts, 150 Almonds; and the place contains besides, in considerable quantities, Apples, Pears, Peaches, Apricots, Nectarines, Pomegranates, Figs, Spanish Chestnuts, and Olives. He mentioned to me, as part of his last year's crop, 250,000 Oranges, 50,000 Lemons, 25,000 lbs. of Walnuts, &c. He thinks his success due to deep and thorough cultivation, and regular irrigation. He irrigates all his trees once in six weeks, and ploughs or hoes after every irrigation. I did not see a single weed or bunch of grass in all his orchards, and such clean culture is very pleasant to the eye. He has on his place wine-presses, and a still-house for making brandy. One man on his place, and with his system, can care for twenty acres of orchard, and one man can pick 5,000 Oranges in a day. He buys the shooks and makes his own boxes, and also makes his own wine-casks. His regular force consists of fifteen men, of whom the ploughmen are Indians; some others are Chinese.

Mildness of the Season—Caution.—Notwithstanding what one daily hears of the mildness of the season and the stereotyped evidences of it chronicled in the daily press—erratic Rose blooms, precocious Primroses, and budding Hawthorns, we must ask our friends not to be lulled into false security, but, on the contrary, to be more than ordinarily on their guard. If the season has been somewhat remarkable for its mildness, it has been specially so for its almost continuous and unprecedented rainfall. A cold summer, wet, sunless autumn, and a drenching winter are badly calculated to place our fruit trees in a condition fit to bring them safely through, in the event of being subjected to the action of severe frost. Notwithstanding present appearances, such a contingency is by no means improbable; on the contrary, experience teaches us that heavy and continuous rainfalls are not unfrequently succeeded by frosts—sudden, sharp, and destructive. Should such occur during the present or succeeding months, we dread the results; for assuredly never was the condition of our fruit trees, &c., less calculated to resist their effects. Green, unripe wood, gorged vessels, sap in motion, and roots in soil cold and drenched to saturation, go to make up the conditions which render tree or plant less capable of resisting the destructive agency of frost. It, therefore, behoves all to be on their guard, and to take measures accordingly, more than if the winter was of an opposite character, calculated to retard rather than promote vegetation. Dryness at the root and dryness of the exposed parts of the more tender wall trees should be secured as much as possible. Any measures calculated to retard the bloom are also worthy of consideration, as its premature development is just one of those newspaper evidences of the mildness of seasons which the practical man and fruit grower has reason to regard with anything but complacency. Though, of course, hopeful that mildness will continue to be the character of what remains of winter, as also of the spring that is to follow, it can do no harm to look ahead, and let the watchword be "Caution."—*Irish Farmers' Gazette.*

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Apples in Barrels.—With reference to the packing of the Apples now sent from the other side of the Atlantic to our markets, we are informed that it is very important that the barrels be headed up on a dry and cool day, and not when the atmosphere is damp. Apples keep better in somewhat loose than in very tight barrels, better when the barrels are laid on their sides than when standing upright, and better in a cool dry cellar than elsewhere.

Rag Manure for Fruit Trees.—Monsieur M. E. Jacquemyns, who has for many years endeavoured to render fertile the sterile lands of Campine, has sent us the following communication on the subject of the best manure to be employed at the time of planting fruit trees. "You have seen," he says, "my fruit trees in Campine, on recently cleared heath, the soil of which is far inferior to that of any other part of my property. The trees have been planted without farm manure, but each tree received at the time of planting from 20 to 24 lbs. of woollen rags, a manure very rich in azote. This kind of fertiliser produced excellent results, and will be welcomed by all who are about to plant in localities where farm manure is scarce."—*Bulletin d'Arboriculture.*

THE LIBRARY.

THE HANDY BOOK OF FRUIT CULTURE UNDER GLASS.*

Those who have read Mr. Thomson's "Handy Book of the Flower Garden" will be able to anticipate the character of the work now before us. But this does more for the fruit grower than that did for the lover of flowers. The author truly says in his preface that most of the fruits treated of have either been included in larger works or have formed the subject of separate observations; but the object now is to furnish a book of moderate size on all points necessary to the successful cultivation and forcing of hardy fruits. While the information given cannot fail to be useful to all, the author has chiefly had in view the requirements of young gardeners entering on their professional career and inexperienced amateurs wishing to superintend their own fruit houses and to manage them so as to obtain from them the most speedy and certain return with a minimum amount of labour and cost. In order to do this effectively, Mr. Thomson begins at the beginning and goes through to the end. Thus in 80 pages the whole matter of Vine growing is discussed from first to last; from the choice of a site to the consumption or transportation of the fruit, Mr. Thomson never leaves his pupils to a doubtful course.

In advertisements we often read of strong canes for fruiting from 10s. 6d. to 15s. each; good planting Vines 3s. 6d. The inference to the inexperienced is that almost any Vines will do for planting, and the idea of special and careful preparation for this object has been too much ignored. Let us hear what Mr. Thomson says on this subject.

PREPARING YOUNG VINES FOR PLANTING.

To prepare one-year-old Vines for planting, about the middle of January select the necessary number of strong prominent buds from Vines that have thoroughly well and early ripened their wood. Cut away the wood to within a quarter of an inch on the upper side of the bud, and that on the underside to within an inch—making clean cuts with a sharp knife. The buds are thus ready for insertion. Take the required number of 4-inch rather deep pots, drain them well, and fill them up rather firmly with three parts light fibry loam, and one part of finely-sifted, well-decomposed leaf-mould. Make a hole in the centre of each to receive the buds, into which they are to be inserted, and surrounded with a little propagating sand. Cover them to the very tips of the buds. When they are put in, place them in a house slightly warmer than a common greenhouse; and if the soil is moist, do not water them for a week. The first week of February remove them to some house or pit where they can be plunged near the glass in a bottom heat of 80° to 85°, with a night temperature of 55° to 60°. Keep them steadily and moderately moist, and they will soon burst their buds; and as they begin to develop their leaves, raise the temperature 5°, and let it run up 10° more with sun-heat by day before giving air. The process of leaf-development and the formation of roots will be nearly simultaneous, although generally leaves slightly precede the roots. Consequently, after they have formed two or three small leaves, they halt in growth till the roots have fairly commenced their work. At this stage see that they do not become over dry. Just keep the soil moist, but not wet, and always with water at a temperature of 80°. As soon as the young roots reach the sides of the pots and down to the drainage, raise them by degrees out of the plunging material and stand them on its surface. Range the night temperature at 65° at night, with 10° or 15° more by day with sun. As soon as they have pretty well filled their pots with roots, and begun to grow away freely with stronger and more transparent-like growth, shift them into larger pots—7 and 8 inch pots are large enough for growing Vines into an excellent condition for planting; for far more depends on the character of the roots they make, and the ripeness and soundness of the canes, than on mere bulk of growth.

There is nothing that so much influences the character of the roots that young Vines make after this stage as the nature of the soil, and the position in which they are grown. Take one of these young Vines now ready for a shift out of a 4-inch pot; let an 8 or 10-inch pot be drained, as is so often the case, with a few large pieces of broken tiles or even bricks put into the bottom of the pot in a careless manner; pot them in a soil of rather tenacious character, and add to it a large proportion of rotten manure; plunge them in bottom heat, and grow them crowded together far from the glass, and what is the result? The soil, instead of being thoroughly filled with well-ripened fibry roots at the end of the season, is only occupied by a comparatively few long fleshy roots, which never ripen properly, and die in the winter. The cane itself is not of that compact, short-jointed, well-ripened stamp which alone is a sure indication that all is right. When such a Vine is shaken out in spring to be planted, it is found comparatively rootless, and in every way inferior.

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* "The Handy Book of Fruit Culture under Glass." By David Thomson of Drumlanrig. Blackwood & Sons, Edinburgh.

Take the same young Vine and shift it into a well and carefully drained pot not larger than 8 inches, in a compost composed of a good, sound, rather light loam, having a fourth part of thoroughly-decomposed manure, and a sprinkling of bone-meal and sand mixed with it. Pot firmly, and stand it on the surface of the plunging material, or even on a shelf or the floor of a light house, and grow it the whole time without bottom heat, and the result is a potful of beautifully well-ripened fibrous roots, that keep fresh through the winter in such quantity that when they are shaken out of the soil for planting in spring, the pot appears to have been full of roots and nothing else. There is no comparison between these two descriptions of Vines for planting. All is in favour of the latter, of course. Avoid, therefore, in growing young Vines, badly-drained pots, a close retentive soil, and *bottom heat after they are well rooted.*

The italics are ours. We believe hundreds of Vines have been ruined by an excess of bottom heat. We once received a batch grown over the pipes in a Pinery. Most of these died when planted out the following spring. Opening the book at p. 193 we find the following sensible instruction upon—

PRUNING AND PINCHING FIGS.

When the trees have shed their leaves, they should be kept comparatively dry at the root all winter. What pruning is necessary should be performed in winter when they are at rest. Very little pruning will, however, suffice, if their summer growths have been produced and regulated according to the foregoing directions. There will be the main stems, with the cordon branches that were established the previous year, when the young plants were in pots,—now extending right and left to about 4 feet,—with their lateral growths at regular intervals, and the cordon growths produced this season. My practice in pruning Figs thus trained horizontally, and from which two crops are to be annually ripened, differs somewhat from that usually pursued, and may be described as a mixture of Vine pruning on the close spur system and ordinary Peach pruning. The first crop of fruit is produced from the young wood of the previous summer's growth; and the second, which ripens generally in September and October, from the young growths of the same summer, and which are produced contemporaneously with the first crop of fruit on the previous season's growth. In order to have a regular crop over all the tree at these two seasons this habit must be borne in mind, and the pruning performed accordingly, so that the trees may be regularly furnished with these two sets of growth.

The shoots that bear the early fruit are only allowed to form about two leaves. Each branch, therefore, bears a double crop before it is cut back—an autumn and a spring one. It then gives place to a young shoot, and so on for ever. The result is highly satisfactory as regards fine fruit, and the orderly appearance of the trees. There is no crowding, no confusion, and, with good management, the certainty of a regular crop. We trust that we have said enough to show what may be expected to be found in this truly useful book, which is illustrated by woodcuts when necessary, and contains a good calendar for every month in the year, together with a few piquant observations on heating by hot water.

GROTESQUE ANIMALS.*

There is a certain irresistible charm in the wildest phantasies of great artists. The villa-studio of Raphael, close beneath the walls of Rome, with the walls of its chambers scrawled all over with the holiday aberrations of a pencil, every touch of which is immortal, is one of the shrines of modern Rome most sought and most enjoyed by enthusiastic tourists. The caricatures dashed off by other great masters, Rubens, Rembrandt, and even Michael Angelo himself—who was not ashamed to descend from the *terribil via* on rare occasions, and allow his pencil to indulge in trenchant sarcasm, or even playful gambols—are always full of that kind of fascination which genius alone can impart; and each grotesque, after its kind, is as thoroughly enjoyed by true connoisseurs as the grander works of the artist. Only a few years ago Mr. Lear, an eminent landscape painter, and a man of real genius, took the town by storm with a "Book of Nonsense," which was beyond doubt the popular book of the season, and gave rise to a perfect deluge of imitators. Now we have Mr. E. W. Cooke, the gifted marine painter, whose pictures have formed a leading feature in all recent exhibitions of the Royal Academy, coming out in a blaze of exuberant fancy with *his* book of clever nonsense, and of science turned inside out, a work which he entitles, "Grotesque Animals." The possibility of the existences of these creatures of his fancy he evidently wishes us to indulge in, as things that might be, he himself playfully gives in the supposition that their entity or nonentity may be reasonably asserted or disputed, according to the philosophical bias of the disputants. It is in that happily placed frame of mind upon the subject that he has placed the following lines upon his title-page.

These oddities, from fancy drawn,
  May surely raise the question,
Will Darwin say—by chance they're formed,
  Or natural selection?

Some of the combinations of form are exceedingly humorous, and have that smack and flavour which only genius and fancy combined can produce. The ammonite shell, for instance, of which the form of the ancient inhabitant is now unknown to science, is supposed by the artist to have been the dwelling of the crested Cocatoo! whose head is seen emerging quite naturally from the opening of the shell. Inasmuch as chickens live for a time in shells, and afterwards leave them, this is not a very far-fetched idea. This shell bird is supposed by Mr. Cooke to have been a monopede—a deduction arrived at by way of the well-known fact that the inhabitants of many kinds of recent shells achieve locomotion by means of a single "propeller," and this shelly-birdy creature is, therefore, by an admissible process of reasoning, made to stand upon a single leg—*va bene! se non e vero e ben trovato.* Half a hundred such fancies—one more curious and ingenious than another, follow each other with a fecundity of invention that is perfectly astounding. One is reminded, by the felicity of the dovetailing, of the remark of one of the great physiologists and naturalists of the age, as quoted by the author of these artistic phantasmagoria—"How all the parts of the animal kingdom fit each other." This had, indeed, been instinctively felt long anterior to the year of grace 1873—in the celebrated "Chronicle of Nuremberg," printed by the ingenious artist, Koburger, in 1493. There are in that ponderous volume fancies depicted by the clever gravers of contemporary artists, almost as fantastic, but not so learned as those wrought out by the gifted pencil of Mr. Cooke. Following the verbal pictures of Pliny, St. Auguste, Marco Polo, and Mandeville, we have in this quaint old volume the verbal descriptions reduced to positive forms by very realistic pencils. The Cynocephali or dog-faced apes, for instance, are metamorphosed into well-formed wild men, with positive dogs' heads. The account of a large-eared race of North Eastern Asia is turned to account by making these organs resemble those of lop-eared rabbits, but being made big enough to serve as a mantle to wrap about the body (*aures tam magnas habent ut contegant totum corpus*). But in these old-world fable pictures there is little of that rich humour and playfulness which distinguishes Mr. Cooke's inventive series, to which we heartily wish a favourable reception and just appreciation by the public, though we almost fear they are a shade too clever for those not rather deeply versed in the mysteries of natural science. To those who are, the book will form a fanciful treat of no ordinary kind.

HORTICULTURAL GARDENS, SOUTH KENSINGTON.

In pursuance of our wish to publish in The Garden plans of all our notable gardens, we this week present one of the Kensington Garden of the Royal Horticultural Society. Utterly opposed as we are to this style of garden, it need hardly be said that the plan is not offered for admiration or imitation, but simply as one of a series showing our gardens as they are. Our plan, taken from the ground specially for The Garden, shows all the latest alterations. These chiefly consist of modifications as to the show-grounds at the south end of the garden and of the abolition of some of the panelled gardens which "cut up" the garden so much. By these changes the aspect of the place is somewhat improved here and there, but the general design is still much too complicated. This garden, which has perhaps been more censured than any public garden ever created, affords a good example of the mischief sometimes wrought by what is called a "nice-looking plan." The plan of the garden, as originally published, looked pretty on paper, and writers describing it, without knowing the very great difference between a plan wrought out on the

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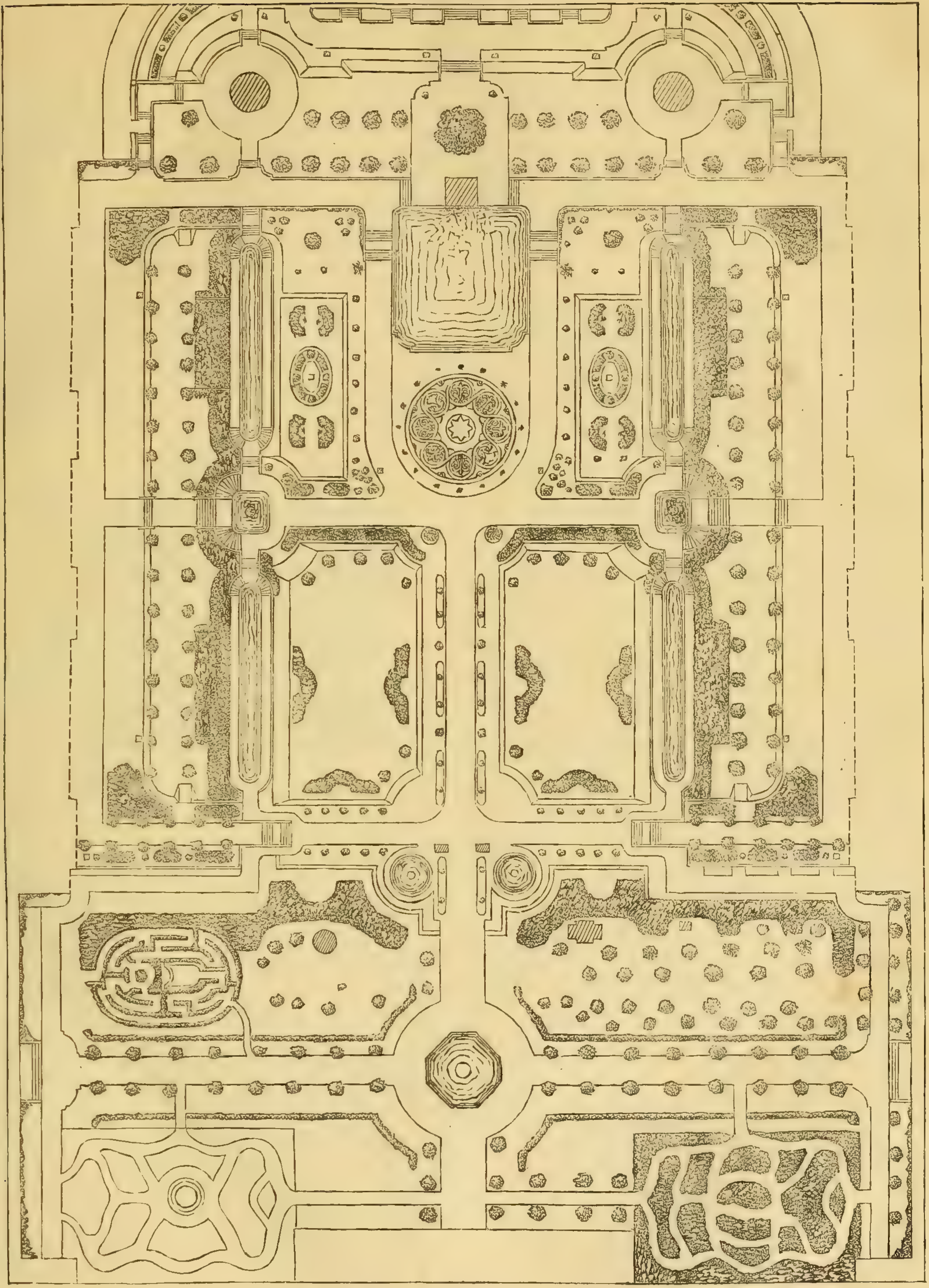
* Grotesque Animals: Invented, drawn, and described by E. W. Cooke, R.A.



NEW PLAN OF THE ROYAL HORTICULTURAL GARDENS, SOUTH KENSINGTON.

ground and one on paper, were eloquent upon it as "full of rich and carefully wrought-out detail." Alas! it proved when carried out rich in nearly everything that was wrong in garden design, and so cut up with details, so devoid of anything like what we understand as breadth and repose, that it was difficult to imagine oneself in a garden at all. Let it long be a caution to all who have to design a garden, that even where the style of gardening is geometrical of the most pronounced type, the necessity for breadth and repose is as potent as in gardens in the natural style, and that to dot about "panel gardens," and mazes, and small ponds, and hedges, &c., almost as thickly as they can be placed over the surface is a blunder unworthy of even an amateur who makes a first attempt at laying out a garden.

THE DESCENT OF THE SAP.

We have received the following communication from one of our correspondents, requesting information as to the cause and nature of the descent of the sap in autumn:—

"I and a few horticultural friends have lately been discussing that highly interesting subject, the descent of the sap at the fall of the leaf. As is usual a difference of opinion existed amongst us, and several expressed a desire to know if the question had been settled by scientific authority, and if so, by whom."

The inquiry is a very fair one at this time, for men's minds are shaking off the old received opinions on the subject, and the new ones have not yet got completely settled. Six or seven years ago to such an enquiry the reply would have been that the sap ascended in the vessels of the cambium next the wood and descended in those next the bark. Mr. Herbert Spencer, however, in a paper read to the Linnean Society in 1866 (Trans. Lin. Soc. XXV. 405) upset this view completely. By a series of beautiful experiments he showed that there was only one set of vessels, and that consequently there could be no circulation. There might be a certain amount of swaying backwards and forwards like a tide, but nothing of the nature of a circling flow from the roots to the leaves and back again. His proof of this left nothing to be desired, but he set himself to account for the descending sap, and there, although equally ingenious, he was less happy in his argument—and for a very good reason—for it seems very questionable if there be really such a thing as descending sap. As Mr. Spencer pointed out, there may be a strain on a bent branch which will close the vessels for a time, as the veins over our knuckles are closed by pressure when we shut our hand, and the fluid in them may be forced back; but that a true continuous descent of the sap ever takes place is yet to be proved. We know that we can see something like circulation going on in the cellular tissues of certain plants; but this appears to be something different and distinct from the general rise of sap from the root to the leaves, and has at all times been generally regarded as a special and collateral phenomenon.

Professor W. McNab, following up the thread of Mr. Herbert Spencer's observations, about two years ago, made some interesting experiments, which we strongly recommend to the perusal of our correspondent. Speaking from memory, the result of Professor Nacnab's numerous experiments was, that in no instance could he discover the sap descending. It was always on the ascent, and depended on the presence of the leaves. If they were cut off, and in proportion as they were cut off, the flow of sap ceased. Our correspondent will see that he has an interesting and not yet exhausted field of inquiry before him.

The conclusion at which we individually have arrived is, that the leaves and tender covering of the twigs (what may be called the whole true skin of the tree), acts as a combination of suckers (perhaps every stoma, and the reader will find them on the skin of the twigs as well as on the leaves, is one), which under the influence of the air and temperature act as a pump, and draw up the sap that enters by the roots. As is perfectly shown by Mr. Herbert Spencer, a portion of the sap penetrates through the walls of the vessels, and deposits itself as wood around them; another portion is, no doubt, evaporated through the leaves. Of course, when the vessels are full, no more can enter, but the fuller they are the more will be squeezed through the walls, and the more wood formed. When night comes and the influence of the day is gone, when, as it were, the pump will not draw, the flow of sap ceases, and it may fall back in the vessels; at all events, as depositation goes on, the quantity in them will decrease. When the leaves fall off in autumn, the pump has, as it were, lost its suckers, and the ascent of sap all but ceases. It does not descend, it only ceases to ascend. Professor M'Nab found, indeed, that when he had cut off all the leaves, there was still a feeble ascent; this, according to our view, is produced by the stomata in the bark covering the twigs, and an examination of the annual rings of ligneous deposit in a stem or branch shows that there is a certain amount of flow of sap and deposit going on in winter as well as in summer, although too slight to be capable of direct observation. Do not let it be supposed that we imagine that this rude comparison of the machinery of the flow of sap in a tree to that of a pump by any means explains the whole mystery of its rise and flow. It is at best only a clumsy attempt to illustrate one part of the process; but so far as it goes, it is consistent with fact, and if it be a true explanation, there can be no *descent* of the sap in autumn. If our correspondent takes a different view, it is for him to prove that there is, not by hypothesis or theory, but, as has been done on the other side, by actual experiment.

A. M.

Methinks I see great Dioclətian walk
In the Salonian Garden's noble shade,
Which by his own imperial hands was made:
I see him smile (methinks) as he does talk
With the ambassadors, who come in vain
T' entice him to a throne again.

"If I, my friends (said he) should to you show,
All the delights which in these gardens grow;
'Tis likelier much that you should with me stay,
Than 'tis that you should carry me away:
And trust me not, my friends, if ev'ry day
I walk not here with more delight,
Than ever, after the most happy fight,
In triumph, to the Capitol, I rode,
To thank the gods, and to be thought myself almost a god."

Cowley.

A City of Magnificent Perspectives.—Stand at the head of Sixteenth-street, Washington, and the eye sweeps down nearly two miles over a paved and well planted street to the very portals of the White House; stand at the War and Navy departments, looking west through F and G streets, and the waters of the Potomac are seen glistening in the sun; stand at the foot of Vermont-avenue, at Lafayette-square, and the eye has an uninterrupted view of three miles to the Harvard University; stand on the portico of the White House, looking out New York-avenue, and the eye sweeps uninterruptedly a distance of five miles to the north-west, beyond Glenwood Cemetery; stand on high ground in the city at the corner of Massachusetts-avenue and Twelfth-street, and the eye ranges over five miles of broad street on towards the south-east, and two miles on towards Kalorama Heights in the north-west; where the President's private mansion and the great public park ought to and probably will be.—*Times.*

A Persian Eden.—The remembrance of a garden which had charmed me as we passed hurriedly through it two days before, enticed me back to Kazeroon. This garden was 2 or 3 acres in extent, and surrounded by walls high enough to keep out intruders and ensure privacy; within them were the coolest shade, the most brilliant colouring, the sweetest of perfumes, and the softest of nature's music. Tall, graceful Date Palms waved their feathery branches aloft in the bluest of skies, gently fanning dark still groves of Orange and Lemon trees laden with golden fruit; below and amongst them were thickets of Pomegranate bushes, bright with their rich scarlet waxen flowers, and endless quantities of blooming Roses and Jasmine; the soft balmy air was luxuriously redolent with fragrant odours of Orange blossom and attar, and filled with the sweet warbling of nightingales, and the soft cooing of turtle doves. In the centre, and approached by grassy avenues and long bowers of sweet Lime trees, stood a ruined kiosk and a broken fountain; there, in the checkered shade, my carpet was spread and my bed stretched; for, once within these fairy walls, why should I leave them? Was not this a spot where wintry cold, burning sun, dreary desert, the whole world outside, might be forgotten? Was there not here the beauty, the quiet, the contentment of Paradise? What was wanting? The sympathetic love of the fair Eve, whom most men search for, but few find; whom the most fortunate find in time, the most unfortunate, too late. —*A. H. Mounsey.*

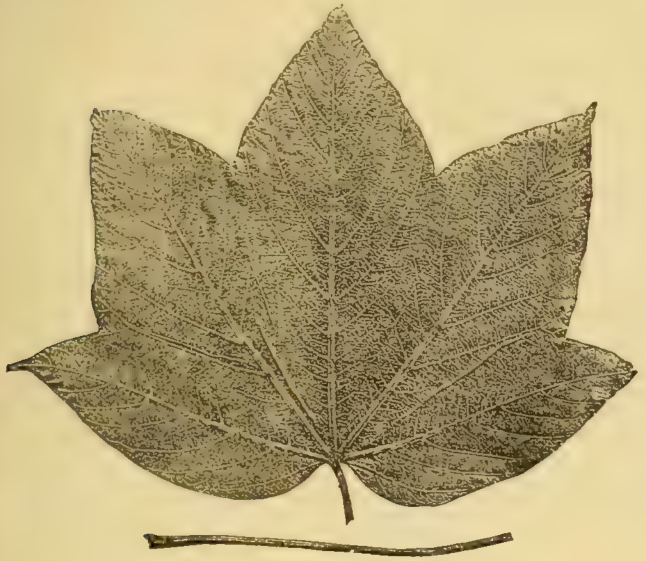
THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE WOOLLY-LEAVED NEPAUL MAPLE (ACER VILLOSUM).

This forms a splendid large deciduous tree 60 to 80 feet high, with the habit and general appearance of the common Sycamore. It is a native of Upper Nepaul and the high Alps near the line of perpetual snow in Kamaoon and Sirmore. It was first introduced in 1845 by Messrs. Osborn, of Fulham. The leaves are large, somewhat angularly five-lobed, palmately veined, cordate at the base, set on long footstalks, and when young, like the buds and petioles, thickly coated all over with a silky down; but when full grown, they are smooth and deep green above, and densely covered with rusty coloured soft hairs beneath. The lobes are ovate with acute points, entire on the edges, and the three outer ones much the largest. The flowers are pale yellow, with the petals bearded at the apex and fragrant; they are produced in long, slender, lateral, nodding, simple spike-like racemes in great abundance in May. The fruit or keys are rather large and villous, with thick carpels and ample cultriform, crenelated wings but slightly diverging, and in long pendulous simple racemes. The length of a full-sized leaf is 12 inches, including the footstalk, which is frequently 5 or 6 inches long, and the breadth is 8 inches.



Acer villosum.

ASA GRAY ON GEOGRAPHICAL DISTRIBUTION.

The remarkable facts in regard to the Eastern American and Asiatic floras, which these speculations were to explain, have since increased in number, more especially through the admirable collections of Dr. Maximowicz in Japan and adjacent countries, and the critical comparisons he has made and is still engaged upon. I am bound to state that in a recent general work* by a distinguished botanist, Professor Grisebach of Gottingen, these facts have been emptied of all special significance, and the relations between the Japanese and the Atlantic United States floras declared to be no more intimate than might be expected from the situation, climate, and present opportunity of interchange. This extraordinary conclusion is reached by regarding as distinct species all the plants common to both countries between which any differences have been discerned, although such differences would probably count for little if the two inhabited the same country, thus transferring many of my list of identical to that of representative species, and then by simply eliminating from consideration the whole array of representative species, *i.e.*, all cases in which the Japanese and the American plant are not exactly alike. As if, by pronouncing the cabalistic word species, the question were settled, or rather the greater part of it remanded out of the domain of science; as if, while complete indentity of forms implies community of region, anything short of it carries no presumption of the kind; so leaving all these singular duplicates to be wondered at, indeed, but wholly beyond the reach of inquiry. Now the only known cause of such likeness is inheritance; and as all transmission of likeness is with some difference in individuals, and as changed conditions have resulted, as is well known, in very considerable differences, it seems to me that if the high antiquity of our actual vegetation could be rendered probable, not to say certain, and the former habitation of any of our species, or of very near relatives of them in high northern regions could be ascertained, my whole case would be made out. The needful facts, of which I was ignorant when my essay was published, have now been for some years made known, thanks mainly to the researches of Heer upon ample collections of arctic fossil plants. These are confirmed and extended through new investigations by Heer and Lesquereux, the results of which have been indicated to me by the latter. The Taxodium, which everywhere abounds in the miocene formations in Europe, has been specifically identified, first by Goeppert, then by Heer, with our common Cypress of the Southern States. It has been found fossil in Spitzbergen, Greenland, and Alaska, in the latter country along with the remains of another form, distinguishable, but very like the common species; and this has been identified by Lesquereux in the miocene of the Rocky Mountains. So there is one species of tree which has come down essentially unchanged from the tertiary period, which for a long while inhabited both Europe and North America, and also at some part of the period the region which geographically connects the two (once doubtless much more closely than now), but has survived only in the Atlantic United States and Mexico. The same Sequoia which abounds in the same miocene formations in Northern Europe has been abundantly found in those of Iceland, Spitzbergen, Greenland, Mackenzie river, and Alaska. It is named S. Langsdorfii, but is pronounced to be very much like S. sempervirens, our living Redwood of the Californian coast, and to be the ancient representative of it. Fossil specimens of a similar, if not the same, species have been recently detected in the Rocky Mountains by Hayden, and determined by our eminent palæontological botanist, Lesquereux; and he assures me that he has the common Redwood itself from Oregon, in a deposit of tertiary age. Another Sequoia (S. Sternbergii), discovered in miocene deposits in Greenland, is pronounced to be the representative of S. gigantea, the big tree of the Californian Sierra. If the Taxodium of tertiary time in Europe and throughout the arctic regions is the ancestor of our present bald Cypress, which is assumed in regarding them as specifically identical, then I think we may, with our present light, fairly assume that the two Redwoods of California are the direct or collateral descendants of the two ancient species which so closely resemble them.

The forests of the arctic zone in tertiary times contained at least three other species of Sequoia, as determined by their remains, one of which, from Spitzbergen, also much resembles the common Redwood of California. Another, "which appears to have been the commonest coniferous tree on Disco," was common in England and some other parts of Europe. So the Sequoias, now remarkable for their restricted station and numbers, as well as for their extraordinary size, are of an ancient stock; their ancestors and kindred formed a large part of the forests which flourished throughout the polar regions, now desolate and ice-clad, and which extended into low latitudes in Europe. On this continent one species at least had reached to the vicinity of its present habitat before the glaciation of the region. Among the fossil specimens already found in California, but which our trustworthy palæontological botanist has not yet had time to examine, we may expect to find evidence of the early arrival of these two Redwoods upon the ground which they now, after much vicissitude, scantily occupy. Differences of climate, or circumstances of migration, or both, must have determined the survival of Sequoia upon the Pacific, and of Taxodium upon the Alantic coast, and still the Redwoods will not stand in the east, nor could our Taxodium find a congenial station in California. As to the remaining near relative of Sequoia, the Chinese Glyptostrobus, a species of it, and its veritable representative, was contemporaneous with Sequoia and Taxodium, not only in temperate Europe, but throughout the arctic regions from Greenland to Alaska. Very similar would seem to have been the fate of a more familiar gymnospermous tree, the Gingko or Salisburia. It is now indigenous to Japan only. Its ancestor, as we may fairly call it, since, according to Heer, "it corresponds so entirely with the living species that it can scarcely be separated from it," once inhabited northern Europe and the whole arctic region round to Alaska, and had even a representative further south in our Rocky Mountain district. For some reason, this and Glyptostrobus survived only on the shores of Eastern Asia. Libocedrus, on the other hand, appears to have cast in its lot with the Sequoias. Two species, according to Heer, were with them in Spitzbergen. Of the two now living, L. decurrens—the Incense Cedar—is one of the noblest associates of the present Redwoods; the other is far south in the Andes of Chili. The genealogy of the Torreyas is more obscure, yet it is not unlikely that the Yew-like trees, named Taxites, which flourished with the Sequoias in the tertiary arctic forests, are the remote ancestors of the three species of Torreya, now severally in Florida, in California, and in Japan. As to the Pines and Firs, these were more numerously associated with the ancient Sequoias of the polar forests than with their present representatives, but in different species, apparently more like those of eastern than of western North America. They must have encircled the polar zone then, as they encircle the present temperate zone now.

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* Die Vegetation der Erde nach ihrer klimatischen Anordnung, 1871.

I must refrain from all enumeration of the angiospermous or ordinary deciduous trees and shrubs, which are now known by their fossil remains to have flourished throughout the polar regions when Greenland better deserved its name, and enjoyed the present climate of New England and New Jersey. Then Greenland and the rest of the north abounded with Oaks, representing the several groups of species which now inhabit both our eastern and western forest districts; several Poplars, one very like our Balsam Poplar or Balm of Gilead tree; more Beeches than there are now, a Hornbeam, and a Hop Hornbeam, some Birches, a Persimmon, and a Plane tree, near representatives of those of the Old World, at least of Asia, as well as of Atlantic North America, but all wanting in California; one Juglans like the Walnut of the Old World, and another like our black Walnut; two or three Grape Vines, one near our Southern Fox Grape or Muscadine, the other near our Northern Frost Grape; a Tilia very like our Basswood of the Atlantic States only; a Liquidambar; a Magnolia, which recalls our M. grandiflora; a Liriodendron, sole representative of our Tulip tree; and a Sassafras, very like the living tree. Most of these, it will be noticed, have their nearest or their only living representatives in the Atlantic States, and when elsewhere, mainly in Eastern Asia. Several of them, or of species like them, have been detected in our tertiary deposits west of the Mississsippi by Newberry and Lesquereux. Herbaceous plants, as it happens, are rarely preserved in a fossil state, else they would probably supply additional testimony to the antiquity of our existing vegetation, its wide diffusion over the northern and now frigid zone, and its enforced migrations under changes of climate. Concluding, then, as we must, that our existing vegetation, as a whole, is a continuation of that of the tertiary period, may we suppose that it absolutely originated then? Evidently not. The preceding Cretaceous period has furnished to Carruthers in Europe a fossil fruit like that of the Sequoia gigantea of the famous groves, associated with Pines of the same character as those that accompany the present tree; has furnished to Heer, from Greenland, two more Sequoias, one of them identical with a tertiary species, and one nearly allied to Sequoia Langsdorfii, which in turn is a probable ancestor of the common Californian Redwood; has furnished to Lesquereux, in North America, the remains of another ancient Sequoia; a Glyptostrobus; a Liquidambar which well represents our sweet gum tree; Oaks analogous to living ones; leaves of a Plane tree, which are also in the tertiary, and are scarcely distinguishable from our own Platanus occidentalis; of a Magnolia and a Tulip tree; and "of a Sassafras undistinguishable from our living species." I need not continue the enumeration. Suffice it to say that the facts will justify the conclusion which Lesquereux—a very scrupulous investigator—has already announced, "That the essential types of our actual flora are marked in the cretaceous period, and have come to us after passing, without notable changes, through the tertiary formations of our continent."

According to these views, as regards plants at least, the adaptation to successive times and changed conditions has been maintained, not by absolute renewals, but by gradual modifications. I, for one, cannot doubt that the present existing species are the lineal successors of those that garnished the earth in the old time before them, and that they were as well adapted to their surroundings then as those which flourish and bloom around us are to their conditions now. Order and exquisite adaptation did not wait for man's coming, nor were they ever stereotyped. Organic Nature—by which I mean the system and totality of living things, and their adaptation to each other and to the world—with all its apparent and indeed real stability, should be likened, not to the ocean, which varies only by tidal oscillations from a fixed level to which it is always returning, but rather to a river so vast that we can neither discern its shores nor reach its sources, and whose onward flow is not less actual because too slow to be observed by the ephemeræ which hover over its surface or are borne upon its bosom.

Such ideas as these, though still repugnant to some, and not long since to many, have so possessed the minds of the naturalists of the present day that hardly a discourse can be pronounced or an investigation prosecuted without reference to them. I suppose that the views here taken are little if at all in advance of the average scientific mind of the day. I cannot regard them as less noble than those which they are succeeding.

Measuring Trees.—A contributor sends to *The Country Gentleman* the following rule for measuring trees, which, he says, he has tested to his satisfaction:—"A stick of timber is desired, say 50 feet long; select your tree, measure 50 feet in a direct line from the foot of the tree, on as near level ground as possible; now cut a stick the exact height of the observer, and stick it in the ground exactly perpendicular; now let the observer lie flat on his back, his feet against the stick and head in the line of the tree and stick, and look directly over the top of the stick, and where the line of vision strikes the tree will be the length of stick, 50 feet, desired. If the ground is not level, the measure will not be exact, but allowance must be made."

Effect of the Rainfall on Trees.—Whatever may be the effect produced on garden and field crops by the enormous rainfall of the past three months, there can be no doubt that our large trees will benefit by it immensely. A real soaking had become for them an absolute necessity, as in many places the soil deep down at the base of the trees was thoroughly dried, and for several years past branches have been dying at a most alarming rate. Worse still, large trees have also died entirely, no doubt starved for want of moisture, the comparatively small amount of rain that has fallen for several years previously having entirely failed to give the ground about the roots that thorough drenching that it has now obtained. Next summer we may reasonably look for a strong growth of young wood, in the case of all kinds of trees, and no doubt, also, the foliage will even, under unfavourable conditions, be retained until a much later period of the year. In some of our parks, gardens, and avenues, we have seen magnificent trees die without being able to assign a reason for such a mishap. How much has drought at the roots had to do in promoting this disaster? Possibly much more than is commonly imagined. When the surface of the soil is either trodden very hard or macadamised over, but a very small amount of the rainfall can possibly reach the roots, and starvation soon ensues. —A. D.

The Ailantus as a Timber Tree.—What dimensions the Ailantus glandulosa may assume in the southern parts of the kingdom, I know not; but one thing I do know, that it has not been my gratification to see it as a fine timber tree anywhere, especially from where I write, North Lancashire. Being at a gentleman's residence some time ago, and walking round the kitchen garden, I was so struck with what appeared to be a peculiar and beautiful Ash that stood outside the garden wall on the lawn, that I could not resist going to see what species of Fraxinus it really was, its noble deep green pinnated foliage being quite new to me. Guess my surprise on nearing it to find it to be a fine tree of the Ailantus —a tree in every sense of the word—a tree that would even tell a tale in a timber-yard, one that would have taken considerable adzing and squaring to prepare it for the sawpit. I had often seen it as a semi-shrub rising above Hollies and Laurels in shrubberies, but never before as a fine stately tree. I know nothing of the nature of its timber, but know that it is a very fast grower; the wood is said to be very close and hard, taking a polish like satin. It will grow in the worst of soils. Why is it not more common?—*T. Williams.*

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Catalpa syringæfolia.—In the garden belonging to Emmanuel College, Cambridge, is a fine old specimen of this tree, with a reclining stem and large spreading head. At 7 feet from the ground the girth of the bole is 8 feet. —J. J. Chater, *Cambridge.*

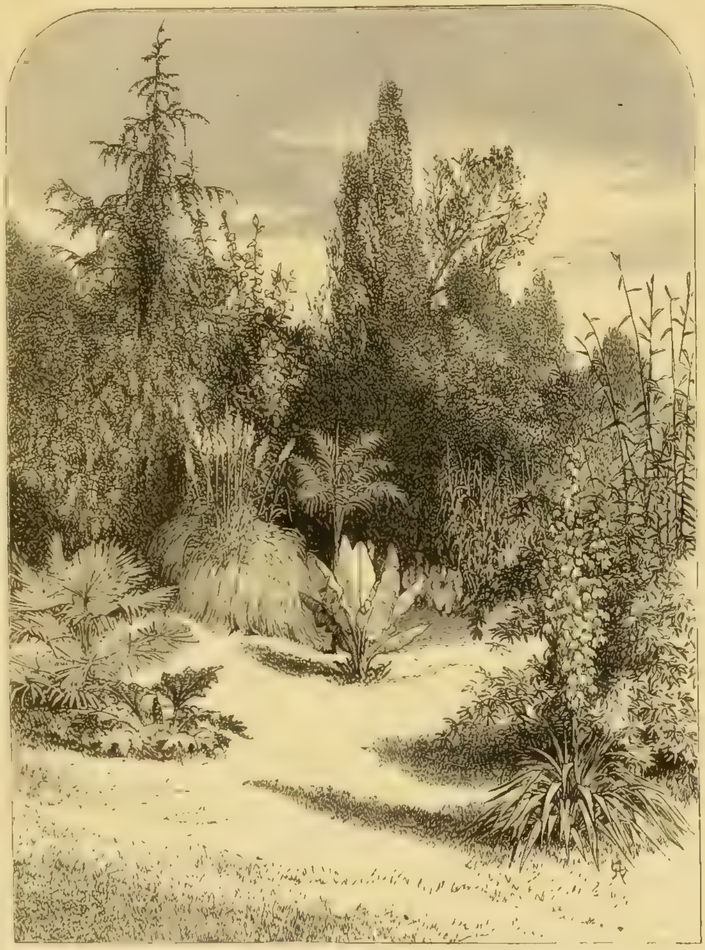
Large Tulip Tree.—In the Fellows' garden at Emmanuel College, Cambridge, is a Tulip tree, about 70 feet in height, the branches of which are 15 feet from the ground. The bole, at 2 feet from the ground, is 2½ feet in diameter, and at 14 feet from the ground its circumference is about 6 feet. It is altogether a magnificent specimen of this kind of tree.—J. J. C.

Neglecting Young Trees.—I can quite sympathize with your correspondent "A Soldier" (p. 56) as regards the loss of his trees. Some years ago I purchased some dozens of fruit and ornamental trees, and a few of them are now doing pretty well, while others are dead and forgotten. The fact is that planting trees requires a great deal of personal attention, especially in poor soils. I formerly left mine to the care of others; but experience has taught me that newly planted trees require good sized holes, say from 4 feet wide to 4 feet deep, on poor soils like my own, with the addition of some loam and manure, unless the ground has recently been well broken up, two or three spits deep. Although the holes are the size described the trees should be planted near the surface, the roots carefully spread out, so that they get the benefit of the sun, the air, and the rain, and afterwards kept free from weeds for two or three feet round. A digging in the autumn, also, I have found beneficial. If your correspondent directs these little matters personally, I think he will be amply repaid for his trouble.—O. S., *Ipswich.*

THE FLOWER GARDEN.

SUB-TROPICAL GARDENING.

Experience has so thoroughly established the possibility of employing subtropical plants out of doors in summer with advantage, that the all-absorbing topic now is, not that such plants will not succeed out of doors, but what kinds shall be planted out next season. In selecting plants for that purpose those only should be decided upon which are of bold growth and ample foliage, plants which stamp their image upon our memory by their individuality of character, and by the beautiful contrasts which they make with their associates, be they in groups or planted as single specimens. I cannot perhaps make myself better understood than by referring to the accompanying illustration, in which are represented several exquisite groups. Prominent in the background is a Palm with charmingly divided leaves; then there is the massive and beautiful Abyssinian Musa, which is readily distinguished from all around it. A little behind it rises the great tussock and large feathery plumes of the Pampas Grass, backed up by dark leaved Conifers that not only afford a splendid contrast and serve to render the picture complete, but help to ward off any sudden or destructive gales of wind that may arise. Another type of leafage is seen in the Fan-leaved Palm and the large and deeply-lobed foliage of Gunnera scabra, while beautiful Yuccas and the long spear-like shoots of Bamboos which appear on the right of the picture make a *tout ensemble* capable of attracting the attention of even the most obtuse lover of nature. It will thus be seen that rich effects may be produced without having recourse to the most tender exotics, which should be kept for ornamenting our stoves.


View in a Sub-tropical Garden.

The endeavour, indeed, to use tender plants so as to produce an effect totally different from that derivable from our ordinary hardy plants led, in the early days of sub-tropical gardening, to the most disastrous results; for not only were many fine leaved plants from stoves killed by their sudden transference from these to the open air, but many plants that had not the slightest claim to be used for such a purpose (except that they came from a tropical country) also met their death at that time from reckless exposure. Thus many failed in their first attempts at sub-tropical gardening, and then condemned the system. It must not be inferred that every stove plant can be induced to become an ornament to our pleasure grounds during summer, even when properly treated, simply because no amount of management will enable some plants to *live* out of the hot damp air of the stove; indeed, some plants which we grow indoors lose all pretensions to beauty in the open garden, and, therefore, should not be used out-of-doors. But why rush to the stove when it is really not at all necessary that stove plants should be employed? To this fact I wish to direct particular attention, especially that of those who live in the suburbs of large towns. Too often we see shapeless masses of one kind of shrub planted in even *small* gardens, where, had a variety of plants been selected, each remarkable for its beauty of outline or boldness of foliage, they would have formed the framework for a pretty home landscape, whilst amongst them flowering plants, shrubs, and trees might be mixed, and small groups of sub-tropical plants introduced in summer with much advantage. Surely such a style of planting must be better than a mere hedge of Laurel, Yew, or similar common-place shrubs, in front of which run a few straight lines of colour, which, however gay for three or four months, lie bare and blank for the rest of the year. A far greater amount of pleasure is derivable from a garden planted as is here represented than from one in which bedding plants form the chief feature. Our flower gardens, indeed, as a rule, have too much colour in them. Nobody having any pretentions to taste would admire a bouquet, let it contain ever so many rare and choice flowers, if it was not relieved by green leaves and fronds of Ferns. We have plenty of grand hardy plants which would form splendid ornaments in suburban gardens; but, in the meantime, I only wish to say a few words upon the management of tender plants intended for the open air. It is but feasible to imagine that any plant wintered in a high temperature will not grow in the summer if planted in the open air; therefore I prefer inuring such plants as are intended for the sub-tropical garden to the very lowest temperature they will bear during the winter. This gives them such a thorough rest that they wake up with vigour, and produce strong, hardy growth. This system will be found far better than inducing the plants to make their growth indoors, and then hardening them off; for no amount of hardening will render such foliage so robust as that made in the open air.

G.

Garden Primroses.—For very early blooming flowers of the most charming character commend me to our garden Primroses. So early do they flower that in moderately sheltered spots, or during mild seasons, they commence throwing up their pretty blossoms in November, and as long as there are no severe frosts, they will continue to bloom right into the spring. Perhaps none excels in earliness, in richness of colouring, or in abundance of flower the single crimson, its very earliness enabling the plants to form new crowns early in the year, thus maintaining its character. For a sheltered winter garden, or for the banks and dells of a wild garden, or for keeping in countenance the pure white of the Snowdrop, or the rich hue of the Scilla sibirica, I know of nothing that can excel this lovely Primrose. I have had that sort as well as seedling forms of it, and other shades of colour, in flower, in a fully exposed situation, and in cold stiff soil, for these past six weeks, and this fact will afford some idea as to what a charming plant it is when in warm, sheltered nooks or borders. It has one drawback, namely, that being so close to the ground, the flowers soon get soiled; but this may be obviated by the use of a little Cocoa-nut fibre strewn around the plants. Both in the Primrose and in all the hardy Primula tribe, the great cause of early blooming is keeping the plants growing on through the heat of summer, and not permitting them, through drought, to lose their foliage. Thus the blooming crowns are formed early and strong, and there is no weakening of the plant, a result that always follows loss of foliage in this class of hardy perennials. Garden Primroses vary in colour from white to all the shades of yellow, lilac, purple, red, violet, and crimson, and as they produce seed moderately well, are thus capable of considerable increase.—A. D.

BANKS *v.* FLAT GROUND FOR SPRING FLOWERS.

For some years I have been advocating elevated base lines for trees, shrubs, and flowers. Even plants bedded out are most effective on banks or rolling ground, though that system of planting has mostly to be carried out on flat beds and borders. There can, however, be no question that raised borders and banks are best for the display of spring flowers and herbaceous plants generally. It is a simple method of doubling, trebling, if need be, their height. Place a Hollyhock on the flat; it runs up say to 10 feet at the most; set it on the summit of a mound 20 feet high, and virtually you have the effect of a Hollyhock 25 or 30 feet in height. This may be thought an extreme way of putting the case. But it is true nevertheless, and the same rule holds good with Phloxes, Pæonies, Pentstemons, Dahlias, and all other plants. Again, the raised base lines make us in our arrangements to a great extent independent of the natural stature of plants, and this endows us with marvellous powers in the disposition of colours and forms. For instance—a glorious patch of blue or yellow is wanted at a higher elevation than usual—a mound of earth will enable us to form it of Alyssum saxatile or Myosotis dissitiflora. The effect of these masses on the same or even on higher levels than the beds of Phloxes, Hollyhocks, &c., would be quite a new feature in the blending of colours and the contrasting of forms. And there is hardly any limit to the extent to which this might be carried.

But in a season like this, unprecedented for its rainfall, another merit belonging to raised banks claims attention. They are drier than flat beds, drain the latter ever so thoroughly. I observe, too, on the slightest frosts that plants are always the most severely nipped that are on or nearest to the level. The elevation, by shooting off the water, likewise keeps out the frost. There are, however, other reasons for the comparative immunity from injury from frost on raised banks. On an even surface, as a rule, the closer to the earth the greater the cold. Little inequalities act like rocks in the ocean. They break the waves up, and cause a dispersion of the monotonous sweep of the cold into little waves of air. Anything that thus disturbs the constant sweep of the cold is likely to prove a pure gain to the plants. Besides there is no difficulty in getting up to 8 or more feet, and above that line the air for some considerable distance is warmer than it is below it. Almost every year I have noticed certain Conifers and shrubs browned up to about 3 feet from the ground; beyond that they are quite green. How often are young Laurustinus killed, when old plants, from 6 to 12 feet high, escape? All this speaks in favour of raised base lines for spring and other flowers. Again, by sloping them to the south and west, what an accumulation of warmth we get. Such raised borders absorb the heat infinitely faster than level ones. The sun hits them at an angle that warms the earth, on the principle of compound interest; and even if we must have two faces to such raised banks, beds, or borders, we can plant the eastern and northern sides with hardier plants. Or by planting both sides with the same sort we may enjoy two seasons' beauty instead of one. It is also a singular fact that many rather tender plants will stand the frost better on the cold side of a raised border than on the flat surface of a level one. They are drier, warmer, and subject to fewer alternations of temperature on the former, whence their greater safety. As to the artistic effects, they are all in favour of raised base lines. Aubrietias, Aconites, Arabis, Forget-me-Nots, Violets, Snowdrops, Squills, Anemones, Crocuses, Tulips, Pyrethrums, annuals, and herbaceous plants in general, how they bulk out, fill the eye, and seem to come to meet one cheerfully and happily from a raised border! Verbenas you have to go and look for them, with head down, to find them on the flat. For these and other reasons that might be given, I would strongly advocate a search for variety this winter where it can be assuredly easily and cheaply found, in the structures of beds, borders, or banks, for spring and other flowers, herbaceous and Alpine plants. D. T. Fish.

PLANTS IN BLOOM IN HERTFORDSHIRE.

The following flowers were in bloom in the garden at Drayton-Beauchamp Rectory, Tring, on the 21st inst., viz.:—

Alyssum
argenteum
Arabis
blepharophylla
Anemone
blanda
Aubrietia
purpurea
Borago
orientalis
Calendula
officinalis
arvensis
Celsia
Arcturus
Cheiranthus
Cheiri
mutabilis
Crocus
aureus
biflorus
Dalmaticus
imperati
luteus
minimus
nivalis
reticulatus
suaveolens
variegatus
Crocus
variegatus fl. albo
veluchensis
vernus
velutinus
Cyclamen
Atkinsi
Dondia
Epipactis
Erica
herbacea
Erodium
hymenodes
Eranthis
hyemalis
Erysimum
helveticum
Galanthus
nivalis and its double-flowered variety
Galanthus
plicatus
Helleborus
atrorubens
fœtidus
niger
orientalis
Hepatica
triloba and its red and white double-flowered varieties
Iberis
semperflorens
Jasminum
nudiflorum
Lamium
variegatum
Leucojum
vernum
Myosotis
dissitiflora
Orobus
cyaneus
Petasites
alba
Primula
altaica
elatior (Jacquin)
variabilis (Polyanthus) various
macrocalyx
Hose in Hose
Primula
vulgaris (various) and veris
Pulmonaria
grandiflora
Scilla
sibirica
Vesicaria
grandiflora
Viburnum
Tinus
Vinca
minor
Viola
floribunda
odorata and its double-white variety
Czar
Giant
præcox (Russian)
Neapolitana and its variety
Marie Louise
suavis and tricolor
Alchemilla
vulgaris

H. Harper Crewe.

Plants in Bloom in Warwickshire.—Yesterday (Jan. 24th), in spite of the frosts of the last few days, the following plants were in bloom in my garden, viz.: Cydonia japonica, Jasminum nudiflorum, Gentiana acaulis, Tussilago fragrans, Chimonanthus fragrans, Cyclamen coum, Christmas Rose, China Rose, Laurustinus, white Iberis, double purple Primrose, Violets, winter Aconites, Snowdrops, Crocus, Erica herbacea, and Primula sinensis. The Primula was planted out in the summer, and has flowered all the winter. Buttercups and Daisies are in bloom in the fields.—M. J., *Ryton-on-Dunsmore.*

Cortusa Matthioli.—I have found this plant most capricious in cultivation, and it is evidently sensitive to slight differences of soil and situation. In the autumn of 1870 I brought home a supply of roots from Mont Cenis, and divided them into three portions, one of which I potted in a mixture of equal parts of peat, loam, and sand; a second I planted out in my herbaceous border, and the remainder in a border of peat, partly under the shelter of American plants. The potted specimens grew luxuriously, producing an abundance of large leaves, but failed to throw up a single flower-scape. The patch planted in the ordinary soil of the herbaceous border gradually dwindled away, making but little growth, and no flower-scapes. The patch in the peat border has mended admirably, growing and flowering with the greatest luxuriance, and ripened a good crop of seed. It evidently requires plenty of root-room, a little shade, and a light, peaty, rather moist soil. The original plants were growing at the bottom of a moist ravine, under the shade of a low thicket.—Geo. Maw, F.L.S.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Primroses.—In looking over thousands of Primroses in the woods, the only departures from the normal condition which I saw were two one a perfectly circular flower fimbriated round the margin, the other never opens its flowers wide, and they never expand beyond the half-blown state. I shall be curious to know if these two forms are permanent. There is a wide field open amongst our British Primroses for hybridists, as any good novelty in this family of plants seems bought by the public as soon as they become aware of it.—Wm. Elliott, *Beechmont.*

Helianthemum vulgare.—The garden varieties of this lovely native plant are very numerous. I have been turning my attention to variegated conditions of this plant, and find that there is one in the nursery trade. I have found three more, a scarlet variety with an even margin of white; a large leaved variety with double yellow flowers, and with a very broad leaf-margin of yellow; this is a most beautiful plant, and I think the Queen of the Helianthemums. It is of robust growth and habit. These are varieties worthy of introduction amongst the choicest collections of hardy variegated plants.—W. E.

THE KITCHEN GARDEN.

PARIS MARKET VEGETABLES AND THEIR CULTURE.

BY A PARIS MARKET GARDENER.

(*Continued from p.* 17.)

WILD CHICORY.

This is sown on a hot-bed broadcast, and rather thickly, in January or February. The young leaves are cut as soon as they have grown large enough, and before they have become hard. They are cut at intervals as long as the plant is in demand at market, and then the bed is destroyed. It may be sown in the open air in spring, and will continue to yield until autumn. Then the plants are covered with a good layer of spent manure, into which they send out fresh leaves. These are cut and sold under the name of blanched Chicory. In order to obtain the salad known as *Barbe de Capucin*, wild Chicory is sown in April, in drills 6 or 8 inches apart. In October the plants are taken up and laid in a trench. A bed of good mixed manure is then prepared in a dark cellar. As soon as it heats, the roots of the Chicory are placed in it in bundles, the decayed leaves having been carefully removed. The plants are slightly watered until they begin to sprout; afterwards they are only watered if the leaves appear to droop, as unnecessary watering rots the hearts of the plants. A crop may be gathered in fifteen or twenty days. By keeping up a supply of fresh manure to the bed, sufficient heat may be maintained to continue the production of *Barbe de Capucin* until March or April. In the north they grow a variety with large roots, which, when roasted and ground, are used to mix with coffee. This kind is not cultivated by Parisian market gardeners. The seed is gathered in August from plants of the previous year. The heads must be rubbed in the hands to separate the seed. Where it is grown extensively, the seed is threshed out with a flail. It keeps good for eight years.

CURLED CHICORY.

The varieties grown by market gardeners are, first and best, the Rouen, then the De Meaux, and Endive. They are sown in January, February, and March, on a hot-bed of mixed manure, covered with frame and lights. When the temperature of the bed is so high that the hand can hardly endure it, the seed is sown on the layer of rotten manure without being raked over or covered. It will germinate in about twenty-four hours, and as soon as it has sprouted fine soil should be sprinkled over it, the bed being still kept at the same temperature. Another bed is prepared for transplanting the seedlings in which they are placed—400 or 500 plants to each frame. They should be well covered from the night frosts. In a fortnight or three weeks they may be planted out permanently in hot-beds. Air should be given whenever the weather will permit. Tomatoes, nine plants to each frame, or other kinds of Chicory half-grown, may be interplanted amongst them. Chicory that is to be planted out should be gradually hardened by the frequent admission of air to the frames. Twenty-five or thirty plants to each light and three to each cloche will be sufficient. Tomatoes may be interplanted, six or nine to each light and one to each cloche. Planting out of doors should not take place before April, otherwise the plants are liable to run to seed. Tomatoes should only be interplanted when the Chicory plants are half-grown. If Chicory is sown in the open ground in September, the seedlings may be transplanted under frames, and will yield a crop in winter if they are well sheltered from the cold, to which they are very sensitive. All sowings made before June should be on hot-beds; however, after April there is no need to hasten the germination. Sowings in the open ground may commence in June. Seedlings in hot-beds may be planted out in May, care having been taken to harden them off previously by the gradual admission of air to the frames. In fact, by the 15th of May all sowings, plantings, and transplantings of Chicory may be exposed to the open air, and the frames and lights removed from the beds. In June white or Turkish Celery may be interplanted with Chicory in beds from which a crop of Cabbages or white Onions has been gathered.

ENDIVE.

The cultivation of Endive is not less important than that of the preceding plant, but it takes place in autumn. It is sown in a hot-bed, if an early crop is desired; but in open ground it is grown in the same manner as Chicory. It may also be interplanted in beds of Cabbage Lettuce, Roman Lettuce, Celeriac, and Cauliflowers. Crops are gathered in September, October, and November, according to the time of sowing. Curled Chicory and Endive are used for salads; and, as they are more highly esteemed when the leaves are white and tender, they are blanched in the following manner: As soon as the plants are fully grown and the leaves well expanded, a piece of straw is tied around each plant and fastened at the top. The leaves are thus pressed closely together, so that the light cannot reach the heart of the plant, which soon turns white in consequence. When this has taken place the plant is pulled up at once. A method of blanching Chicory by placing an inverted flower-pot over each plant has been proposed. In dry weather this plan answers pretty well, but in damp weather the plants rot off. Besides, in the market they will only have Chicory and Endive which have been tied up as we have described, and which have very green leaves outside and white hearts. In order to obtain seed, some good plants are placed under frames and sheltered from the frost. In March they are transplanted, without breaking the ball, in a warm position. The Chicory plants should not be placed near the Endive, or hybridization will ensue. The stems are cut when the seed is ripe, and tied together in bundles, which are hung from the ceiling to save them from the mice, which are very fond of this seed. It keeps good for seven or eight years.

CAULIFLOWERS.

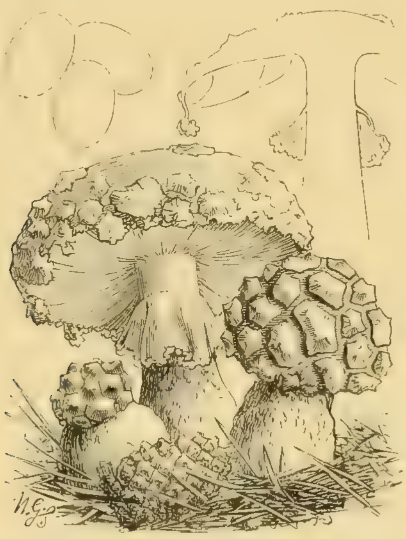
There are three varieties grown—the tender, the half-hardy, and the hardy. In spring the tender kinds, Little Salomon and Lenormand, are grown. When grown in hot-beds, the seed is sown about the 1st of September; but if in cold beds, from the 10th to the 15th. In October they are transplanted into a cold frame, 200 or 300 plants under each light, in a good depth of spent manure. After transplanting they are watered, to settle the soil about the roots. In December they are taken up, the ground is deeply dug, after which the plants are replanted deeply in the same place, and a good covering of spent manure laid on. When the weather is not frosty, air is given; but on the least appearance of frost they should be covered with mats or litter. Cauliflowers may be planted in hot-beds in January or February. If there are no Carrots in the bed, six Cauliflowers may be planted under each light; but if there are Carrots, the number of Cauliflowers to each light should be reduced to four. Some market-gardeners plant Cauliflowers on old hot-beds, and interplant George or Gotte Lettuces; but this is a matter of individual taste or fancy. When the Cauliflower plants have attained sufficient strength to do without the frames, these are removed; and should there be a return of frost, the plants should be protected at night by mats placed on cords, which are fastened to stakes driven into the corners of the beds. Cauliflowers which have been interplanted among Cabbage Lettuce and Roman Lettuce in a cold frame may be transplanted in the open air in March, either among sowings of Carrots and Radishes, or interplanted among other vegetables. All the Cauliflowers sown in September come in among the early crops in spring. They may also be planted in the Melon trenches and on spent manure in July. The variety called half-hardy is sown under cloches in November, transplanted under frames or cloches in December, and planted out in April. Monthly sowings are also made from January to June. This plant requires a good deal of attention. As soon as the flower-buds appear, they must be covered with leaves plucked from the parent plant, and looked after daily, as they are prized in proportion to the whiteness of the heads. They require constant watering for two months at least; and all caterpillars, snails, slugs, and earwigs, which are very destructive to this plant, should be destroyed. Cauliflowers should be cut as soon as the flower shows a tendency to expand. Plants sown in September and planted out in hot-beds will yield a crop in May, and in June if planted out in cold-beds; but if planted out in the open air, not till July. Cauliflowers sown on the 15th October (St. Thérèse) come in in July, those sown in January and February are gathered in August, those sown in April and May are cut in September and October, and those sown in June come in in November and December. This last crop is often spoiled by the frosts; in this case the plants are taken up without breaking the balls, and laid in in a trench under lights covered with mats or dung. No sowings are made between the 15th of June and September. Seed of the tender variety is gathered from the earliest and finest plants; that of the half-hardy kind is obtained in the same way in the middle of the season, and of the hardy kind at the end. The seed-plants are allowed to run to seed, and watered moderately at the root; excess of moisture induces the generation of insects and decay. The seed should be gathered before ripening, and hung up to dry in the shade. It keeps good for five years.

THE HOUSEHOLD.

FIR-CONE MUSHROOM.

AGARICUS (AMANITA) STROBILIFORMIS.

This truly magnificent agaric grows generally in Fir plantations, but may sometimes be found in grassy hedgerows under trees; though generally considered a somewhat rare agaric, it has been very abundant during the last autumn. It may be known by its almost pure white colour (slightly inclined to buff), its large patches on the pileus resembling in shape the scales of Fir cones, and its thick, solid, compact flesh and stem, and large, well-developed annulus. It is closely allied to Agaricus rubescens, and the methods of cooking this species will well apply to A. strobiliformis.



Agaricus (Amanita) strobiliformis (Fir-cone Mushroom); generally amongst Firs; colour, white or pale buff; size, 6 inches diameter, and 6 inches high. With section and spores enlarged 700 diameters.

Modes of Cooking the Agaricus strobiliformis.—It may be toasted, boiled, or stewed in the ordinary way.

Fried Strobiliformis.—Place the full-grown agarics in water for ten minutes, then drain, and having removed the warty skin, fry with butter, pepper, and salt. The ketchup made from Agaricus strobiliformis is rich and good. As it grows freely, and attains a considerable size, it is very suitable for that purpose, quantity being a great desideratum in ketchup-making.

Marmalade.—It is well known that the Seville Orange has been for years in high esteem, and formerly the price was much higher than for sweet Oranges; but there was no reason why that especial kind should not be grown elsewhere as well as in Seville; its growth has, therefore, now spread through the whole of the Orange-producing districts of Spain, as well as in the islands of Sicily and Malta, and the only difference between those grown in Seville and elsewhere is in the mode of packing. But this widespread growth has reversed the order of things with regard to price, for whereas the bitter Orange used formerly to be the dearest, it is now often the cheapest; and manufacturers of marmalade have taken advantage of the cheaper material which the increase of supply and the successive reduction of the sugar duties have put in their way, to supply the public with marmalade at prices which, compared with twenty-five years ago, are about one-half. The quality of the article now supplied has also improved in about the same proportion as the price has diminished. Machinery has here, as elsewhere, of late been largely employed, and with present aids ten persons can produce as much marmalade in one day as formerly employed one hundred; and the public, not slow to appreciate really good and wholesome articles, consume at the present time twenty times as much as was consumed twenty years ago. A parcel of Malaga Seville Oranges was sold the other day at 14s. per half-chest, each containing 500 good sized Oranges; and even this price will leave a profit to the importer. Indeed, the fruit is so cheap in the producing districts that the freight to this country is more than half the first cost. The old notion of marmalade being adulterated with Turnips, Carrots, &c., I believe to be a mistake, for if such were used the article would not be even eatable.—*E. Pink.*

Baked Apples.—Apples of uniform size are selected, and simply wiped and cored. This last operation is quickly performed by punching them through the middle with an Apple-corer, thus removing the stem, seeds, and tougher parts, and making an opening for the introduction of sugar in the cooking operation which follows. After dipping the Apples in water, they are placed in any deep pan or baking dish, and sprinkled with sugar, about a teaspoonful to each Apple, and a teacupful of water turned on around them. They are then baked with a slow, steady fire till soft, when they should be removed from the baking pans for cooling and the table. When served with cream, this is a dish fit for the gods. Every part of the Apple can be eaten, the sugar having neutralised the acidity in the fruit, and the cooking making tender the skin. It is a capital substitute for Strawberries. There is another way of treating sweet Apples, which some of the ancients did not practise. Stew them in a porcelain kettle, with just enough molasses and water to prevent their burning, till cooked through, and then transfer them to the oven, with all the liquid residuum, to dry and brown. This gives a baked Apple, half jellied, delicious in flavour and moisture, that any one can enjoy.—*American Paper.*

Absinthe.—Absinthe is not rare in west-end clubs; a few words on its history, composition, and effects may therefore point a moral in Pall Mall as well as on the Boulevards. Few know how the insidious poison was introduced into Europe. Artemisia absinthium is the plant from which "green ruin" is extracted. It grows spontaneously in great abundance in arid and uncultivated regions, and its cultivation for the apothecaries and distillers has become a special industry during the last forty years. The best liqueur is manufactured in the little town of Couvet, in Switzerland, and at Pontarlier, in France. The proportion of alcohol in this liqueur is considerable, its flavour is strong, very aromatic, but not at all bitter. Workmen drink absinthe verte, or absinthe blanche, liqueurs of inferior quality, much less alcoholic, and much less mischievous. Absinthe is adulterated with Angelica, Spinach leaves, Nettles, and sulphate of copper occasionally. It has only been in use as a liqueur for the last thirty years. The extract of absinthe, a common apothecary's drug, was extensively used in Africa against dysentery in the camps. The bibulous ne'er-do-wells of the African legions acquired a liking for the medicine, and an officer of Marshal Bugeaud's staff introduced it as a liqueur into Parisian *cafes*, making, it is said, a great fortune by the innovation.

Icehouses.—Would you kindly give me some information as to the construction of an icehouse. I had one made which held nearly 300 loads. We filled it in November, 1871, and used about two cart-loads of the ice in April. It has only been opened twice since, until the middle of October, when it was found to contain only about three cart-loads. Such ought not to be the case if the house was well constructed; at least I think not, for we could keep the ice better when we had it in a stack. The sides of the house are built of brick, laid in cement, with a hollow cavity behind. The floor is laid with stable tiles, and the house is double thatched, first with straw, and then with Heather. There is a good passage and double doors; but no ventilation. Would two or three air tubes assist in keeping the ice longer?—Thomas Ashby, *Armagh.* [The sides and roof of the house seem properly formed to protect the interior from atmospheric influences. Has the mistake of putting open-air drains below the flooring been made? If so, take the drains up, fill with sand and relay them. The most probable cause of the ice not keeping well was in the fact of its being thin and watery when stored. Ice stored from the comparatively slight frosts of the winter in question did not keep well. Too much stress cannot be laid on the recommendation to pound and pulverise the ice when stored; strong mallets and strong arms should be freely applied for the purpose. Ventilation in an ice well is a matter of difficulty in arrangement, and of doubtful efficiency. The more completely the well is kept from the fluctuations of the outer air the better.—W. I.]

WORK FOR THE WEEK.

PRIVATE GARDENS.

The Flower Garden.—When the weather is dry, add some turfy loam and well-decomposed manure to beds where large plants, such as those of Ricinus, Ferdinanda, Wigandia, and other gross feeders, are to be grown, *i. e.*, if the beds are now empty. If the soil last year was found to be too moist, turn it out, and place a layer of stones, broken bricks, &c., in the bottoms of the beds. Mulch all newly-planted shrubs or trees, and affix strong but neat stakes to such as require support. Prune back pretty hard some Clematises for early flowering; some of the hardier Rose plants may also be pruned for the same purpose. Tree Pæonies, Myrtles, the Japanese Quince, and several other rather tender plants, should have a little protection from frost; for although their roots and principal stems might escape unhurt, their young shoots might be considerably injured. Lay Box and other edgings, and prune and tie up climbing plants. Where new lawns are intended to be made, the ground should now be cleared of all superfluous trees and shrubs, and the soil should be trenched over, turning all rough material into the bottom of the trenches, and making the whole perfectly level, smooth, and firm by means of rolling and raking. The seed should be sown in the latter half of this month.

Bedding Plants.— Hot-beds should now be put up for the propagation of these where hot-water heated structures are not available for that purpose. Such beds may either be raised above the ground or sunk, and in extensive places some of both kinds will be found serviceable. A little extra warmth may be communicated to ordinary frames by means of a lining of fermenting material applied to their sides; this additional heat will induce the plants to start into growth and to soon begin to yield material for cuttings. Propagation of Verbenas, Heliotropes, Ageratums, and other soft-wooded plants should now be commenced, and places heated slightly should be prepared for the reception of the young plants when they are rooted and boxed or potted off. Apply a brisk heat to Solanums, Ferdinandas, Abutilons, Wigandias, and other strong-growing sub-tropical plants that were starved in pots last summer, for producing stock, and pinch out their tops, so as to induce the formation of side shoots for propagating purposes. Seeds of various kinds of plants for summer gardening may now be sown, such as those of Acacia lophantha, Cineraria acanthifolia and maritima, Acanthus latifolius, Centaureas, Cannas, Pyrethrums, Lobelias, &c. Perillas, Marigolds, Stocks, Asters, and similar plants are best left undisturbed until next month.

Specimen and Exhibition Plants.—Large Heaths, Chorozemas, Boronias, Dracophyllums, Genetyllises, Aphelandras, and similar plants should now be staked and tied into such shapes as it may be desired they should assume. A position near the glass is best, and especially one in which all sides of the plants may be subjected to an equal degree of light. In training plants of Dracophyllum, unless the long shoots are twined round the base of the plant, and only the points of last year's shoots allowed to grow upwards, a symmetrical or handsomely grown specimen cannot be obtained. Many train the old wood of these plants over a trellis and allow the blooming points to project outwards a little, but the result of such a method is not satisfactory. From specimen Heaths whose roots were reduced last summer when repotted, no flowers can be expected during the ensuing summer, and any blossoms that do appear should be removed so as to promote free growth. Heaths whose roots are so reduced generally take two years to recover their former vigour, but the second year after the operation, if they have been judiciously treated, a magnificent amount of bloom may be expected. Show and fancy Pelargoniums keep in a cool well aired house and in close proximity to the glass. If the stages do not permit of them being near enough to the glass, raise them upon inverted pots, blocks of wood, bricks, &c. Although wirework for training purposes was refixed when the plants were cut back, no attempt should be made to tie down any of the shoots yet; on the contrary, a slow and stocky growth should be encouraged, which is the most productive of flowers; no fire-heat should therefore be employed for these plants in winter beyond what is necessary to expel frost. If required for early shows a little fire-heat maybe applied after February. Allamandas may be repotted, cut well back, and allowed to break freely; they should be kept moderately dry for a time. Dipladenias will now be producing their young wood, which should be trained to fine string run across the rafters inside the stove. If the pots in which they grow are plunged, or even partially so, in a moderate bottom heat, it greatly assists their growth; and if the wood is produced early without check, and by free exposure to light made firm, abundance of flowers will doubtless be the result. If not already done bring down the shoots of Clerodendron Balfourii and splendens and train them around the trellises fixed on the pots. As Clerodendrons produce their flowers from the old wood none of it should be removed at present; but after they have done blooming they may be pruned, repotted, and encouraged by bottom heat and a high temperature to produce their young growths, which should be trained along the inside of the glass on threads, as recommended for Dipladenias, with the exception of the difference of season, viz., Dipladenias from the middle of January until they begin to come into bloom, and Clerodendrons from the time they have done blooming until they form and thoroughly mature their young shoots, which will be the blooming ones of next season. Stephanotises may now be unfastened from the cords on which they have been supported and trained around their trellises; if required early, raise the temperature of the house or transfer the specimens to a warm moist stove. A too high temperature in winter is, however, more injurious than beneficial, as it deprives them of their proper rest; but it must not be allowed to fall under 55°.

Indoor Fruit and Forcing Department.—For Pines prepare a good stock of soil for potting, and lay it under cover for some time prior to using it. Water the plants but sparingly, avoiding too much drought, or, on the other hand, a soddened condition of the soil. For stock plants maintain a night temperature of 70° and a bottom heat of 80°; 10° lower temperature will be quite enough for succession plants, which should not be excited till the end of the month. No Vines should be allowed to carry any of last year's fruit till now, and if any bunches are still hanging on them, they should be cut off at once, with pieces of the wood attached to them, inserted in bottles of water, and kept in the fruit room; this allows the Vines to be properly pruned, and to be get in readiness for starting into growth at any time when required. Give some manure-water to pot Vines that are swelling fruit, and keep them in a brisk, moist temperature; 65°, with a dry atmosphere and a little air, are necessary for such as are in bloom. Syringe daily Peaches and Nectarines that have set their fruit, and attend to disbudding and watering whether the plants are in pots or borders. Keep Figs in pots in a bottom heat of from 75° to 80°; if maintained by means of fermenting material so much the better. Syringe daily, and supply water moderately. Keep those for late work in sheds or turned on their sides under stages, quite dry. Prepare hotbeds for Cucumbers, placing a little mound of good soil in the middle of the bed over the manure, and letting it rise to within 6 inches of the glass; one mound under each light is sufficient; shift seedling Cucumbers into larger pots, and a day or two afterwards pinch out the top of the leading shoot. Maintain a night temperature of 70° both in pits and frames, both for Cucumbers and newly-planted-out Melons. Keep up a succession of Strawberry plants; early Peach-houses or Vineries will be good positions for the earliest batch; succession fruit houses for the next earliest crop, and frames for a late supply. Mushroom beds, if at a temperature of 60°, may now be spawned. Continue the forcing of Asparagus, Seakale, and salading. Sow some seeds of vegetables for very early crops on slight hot-beds.

Hardy Fruit and Kitchen Garden.—The pruning of fruit trees, and also the nailing of such as are grown against walls, should be proceeded with, more particularly those grown on south walls. Whilst the mornings continue frosty, manure may be wheeled on to open quarters, the remains of spent crops, such as Cabbage or Brussels Sprouts, should be cleared off, and preparations made for other crops. Plant some early Potatoes in a warm position on a dry light soil. Make new plantations of Strawberries, if such was not done in autumn. Make new plantations of Horseradish, Jerusalem Artichokes, Rhubarb, &c. Sow some early Cabbage seeds, also a pinch of Savoy seed in a warm situation for early crops. Of Garlic, Shallots, and Rocambole plant some bulbs in rows a foot apart, and 6 inches asunder in the row. Tansy, Tarragon, and some other herbs should have their crowns divided, and fresh plantations made, if necessary, with the divisions.

NURSERIES.

Indoor Department.—Proceed with the grafting of Correas, Boronias, Azaleas, Camellias, &c,, and keep the frames in which they are set closely shaded with pieces of newspaper. Proceed with the propagation of soft-wooded bedding plants, such as Tropæolums of the Lobbianum section, Petunias, Verbenas, Lobelias, Salvias, Heliotropes, Ageratums, Pelargoniums, Fuchsias, Lantanas, &c. If old plants of these are now placed in a brisk heat, abundance of cuttings may be obtained, and very soon after the cuttings have become rooted, they, in their turn, will afford young tops for the same purpose, so that before May, with plenty of room, heat, moisture, and some old plants to begin with, a good supply may be obtained. The finer kinds of autumn-struck Pelargoniums may now be potted off singly into large sixty or forty-eight sized pots, and replaced in their old quarters; if the house, frame, or pit containing them be kept rather close for some days after the introduction of the newly potted plants, scarcely any check will be sustained. Keep Heath cuttings in frames tolerably close, in a temperature of 45°; shade with canvas or newspapers from midday sun. Pot old stocks of Hollyhocks in good rich soil, and place them in an intermediate house, so that the shoots may be taken off as they grow, and be used as cuttings. If the roots were potted in October or November, and since then wintered in a frame, they will start much more freely than newly potted ones. Prick off young Cyclamens into pots or pans, and keep them near the glass in an intermediate house or pit. Cyclamens are commonly sown in early spring, but, treated in that way, good flowering plants by next winter are seldom obtained, whereas those sown in November in a temperature of 45°, pricked off when they have made two leaves into pots or pans, form excellent blooming plants by the time they are 12 or 14 months old. Plants of Euphorbia jacquiniæflora that have done flowering, should have their flower tops pinched off. They should then be encouraged, by means of additional heat and moisture, to make fresh shoots, which, taken off with a heel, or even without one, and inserted under a handglass like ordinary stove plant cuttings, strike as freely as Verbenas. The stems of these plants are commonly cut up into little pieces, each having one or two eyes, which are treated like Poinsettias, Vines, &c., but they do not form such nice plants as those obtained by the former method; neither do they root so quickly nor grow so fast as cuttings do, and the earlier the latter are rooted and the stronger they become before their flowering period, the finer will their inflorescence be. Vine eyes should now be inserted in 60-sized pots, which should be plunged in a moderate bottom heat. If shoots have been saved from Vines pruned more than two months ago, and their ends inserted in a border since that time, they will afford good eyes from which to propagate now. Roses grafted in November and December, if they have taken well, should be repotted into large 60-sized pots in a good loamy soil. Pot singly rooted cuttings of Ixoras, Dracænas, Aphelandras, Eranthemums, Hoyas, Gardenias, &c., as they become ready, and keep them in a moist brisk temperature. Make a little incision around the stems of Dracænas, Dieffenbachias, tall-stemmed Alocasias, &c., just below the crowning tuft of leaves at the summit of the naked stem, and tie around the incision some damp moss mixed with silver sand, so as to induce the plants to callus and emit roots before they are separated from the parent stock.

Frame Ground, &c.—Heaths and other greenhouse plants in frames should be well ventilated on every favourable opportunity, but protected from frost when it occurs by having mats spread over the glass. The sides of the frames should be protected by means of a lining of straw. Ivies, Rhododendrons, Jasmines, Clematises, Skimmias, Magnolias, and other plants in pots, but not in frames, should be protected from frost by means of a framework of hoops covered over with mats. Every thing at all tender out of doors in pots should be plunged in coal ashes, cocoa-nut fibre, or other material, even although unprotected in other respects. Any somewhat tender small Conifers or other evergreen or deciduous plants grown out of doors and likely to be injured by frost should have some straw strewed over them at night, and if the frost abates in the morning it should be removed and again applied at night. Proceed with digging, trenching, transplanting, pruning, and other seasonable operations.

MARKET GARDENS.

Get stumps of Brussels Sprouts and Savoys cleared off old plantations of these vegetables as speedily as possible, and cart manure on to the ground, which should be dug two spades deep, or else trenched and ridged. A few of the finest of each kind should be saved for seed, and should be transferred for that purpose from the open ground to the sides of hedges or to other odd corners. Lift any Parsnip roots still in the earth with forks, so that the ground may be prepared for other crops. Keep the hoe at work amongst young Cabbages, so that a strong and vigorous growth may be encouraged. Expose freely, throughout the day, Cauliflower plants both in frames and under hand-lights, and at night, when the sashes are put over them, tilt them up a little, both at back and front, so as not to crush the leaves, and also to keep the plants pretty hardy. Although subjected to a few degrees of frost, they will not suffer if they have been previously properly cultivated. Lettuces in frames should be quite as freely exposed to the air as Cauliflowers, but great care must be taken to guard against cold rains, hail, or snow, for such would produce damp amongst them; therefore replace the sashes immediately such unfavourable circumstances present themselves. Thin such beds as are too thick, and dredge well with dry sand or wood ashes. Lift Rhubarb roots as required; indeed all that are intended to be forced should now be lifted, and built up into beds, which may be started into growth in succession. Keep up a brisk temperature in such beds as are being forced, and recruit declining heat by means of fresh linings. Of Asparagus and Seakale also keep up a good succession. Take great care of Radish beds; uncover them every morning when the weather is at all favourable, and replace the litter at night. Preparations must now be made for Potato planting, and a piece of the driest ground should be selected for the earliest crop; between fruit bushes, if not too close, will do for the later ones. Wallflowers are now coming freely into blossom; and Sweet Peas are also growing apace; stakes should, therefore, be applied at once to the latter, if not previously done. Sow some seeds of Stocks in a frame, moderately heated, for yielding flowers in early summer.

MESSRS. SUTTONS' NEW SEED WAREHOUSES.

The *Builder* of last week has a good illustration of the Market-place front of Messrs. Suttons' handsome new seed warehouses at Reading. During the last few years (says our contemporary) nearly the whole of the extensive premises belonging to this well-known firm have been either remodelled or rebuilt. The frontage to the market-place remained, however, until quite recently, as heretofore; but possession having been obtained of two houses immediately adjoining, the present handsome structure has been raised. In the front, which is built of white Mansfield stone, are three noble arches, two of which are windows lighting the retail departments; whilst the third, somewhat more elaborate in design than the others, forms, in connection with corridors, the main entrance to the whole of the establishment. The first floor is devoted entirely to the purposes of a library and recreation-room, and has lavatories attached to it. The ground-floor is 15 feet high; the first floor 14 feet, and the total height from the pavement line to the flat of the roof is 63 feet. Immediately at the rear of the market-place block of buildings, is the sample market, 78 feet long, where single sacks, as specimens, of nearly all the more bulky garden and farm seeds, stacked in the larger stores, are ranged for inspection. One of the most remarkable of the departments, however, is that devoted to the execution of kitchen garden seed orders. Here is a room, 92 feet in length, connected with five smaller rooms, all of which are lighted entirely from the roof. The wall-spaces thus obtained are fitted from floor to ceiling with numberless drawers and shelves, loaded with many thousands of packets of seeds, of various dimensions, ready for sending away. Further on to the south, the buildings are occupied by farm-seeds in sacks, piled in regular order one above another, an avenue being left down the centre. The dimensions of this portion are:—Length, 161 feet; breadth, 34 feet. The whole is terminated by a handsome and capacious lecture hall, completely fitted, with open-timbered roof, stained and varnished and plastered between the rafters. On the opposite side of the road, Messrs. Sutton have built and fitted up a coffee and refreshment house, which is largely used, not only by their own men, but by many others who prefer getting their meals there to the plan of resorting to an ordinary public house. The total cost of the new buildings, exclusive of land and fitttings, has been about £17,000.

LAW NOTES.

Lopping Overhanging Boughs.—Employers are liable for the acts of their servants, but how far landowners are liable for the acts of their trees seems open to doubt. At Newport, a few days ago, Mr. Inglis Jones was summoned for neglecting to cut some trees of his which overhung the turnpike road, after having received a notice to do so. The trees extended over half the road, and it was alleged they obstructed the air and sunlight, that droppings from the boughs damaged the road, and that the lowness of the branches to a certain extent impeded the traffic. On the other hand, evidence was produced to the effect that the trees were ornamental, that they formed part of a plantation, and that the lowest bough was 24 feet 3 inches high. In the end no order was made on the subject, and it is to be presumed that the trees will escape amputation. In the meantime there can be no doubt that when trees standing near a highway are about to be lopped or cut down, due notice should be given to passers-by. On Tuesday an inquest was held at St. George's Hospital on the body of a man, aged sixty-four years, who expired from injuries received by the falling of a tree standing in the grounds of Stratheden House, Knightsbridge. The unfortunate man was walking along the pavement, when he was struck to the ground by the descent of the tree, which was about to be cut down, but suddenly fell without warning, the roots at the back part of it having some time before been cut to make way for the footing of a wall. A verdict of accidental death was returned, and it would be as well in future that when trees standing near a highway so frequented as Knightsbridge are in an unsafe condition, notice should be given to foot passengers of the danger they incur by walking past the premises.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

BOUQUET MAKING.

The present season of the year gives better opportunity perhaps than any other for thoughtful practice in one of the most beautiful and interesting of the fine arts—the arrangement of a few cut flowers into a bouquet deserving the name. A well made bouquet is the little lyric poem, so to speak, of the thorough gardener. The greater and more lasting efforts of his talent, those set forth in the arrangement of his outdoor shrubs and plants, should deserve the name of his epic or his dramas; the fragrant little bunch of blossoms he calls his bouquet, culled with judgment, and arranged with due regard to the laws of harmony and common sense, should quite as well deserve to be looked upon as a sort of ode or sonnet, representing in miniature the ideas of the garden itself, though requiring a treatment of its own. Summer always provides for every one; it is difficult for a man to go astray in arranging cut flowers, when the full tide of June and July comes to wrap him round; Nature then almost speaks for herself as to what shall be done. The general rules and principles are nevertheless the same; and however wealthy the bouquet maker may be in material, and however easily things may in summer time seem to fall into their proper places, he should still go on educating his taste. Would that the world in general could or would learn the difference between a bouquet and a mere handful of flowers! However pretty individually, however sweet and shapely each one may be in itself, if taken at random, and simply tied together, flowers they are still, it is true—we cannot cancel the beauty of that little fact—but they are no more a bouquet than the run of the fingers, vaguely and wantonly, over the strings of a harp, is productive of music. There must be symmetry of general form, not mathematical symmetry, but such as we see in a Birch or a Chestnut,—for a bouquet may in general design be either light and tender, or massive and sumptuous; there must be accurate balance also of colour, with plenty of white and green, and a nice concord of scents. The last-named particular, though often one of the least regarded, or never thought of at all, is in reality one of the most vital. The very name "bouquet" carries with it, indeed, this identical idea, being derived from certain ancient words which imply "perfection of odour." The dictionaries often assign it to the French term for a bush, but, excepting in connection with the arbitrary and exceptional term a "rose-bush," the latter bit of etymology may be let go whither it pleases. Sound the word, without thinking of the modern way of spelling, and we are at once reminded of its kindred term, *tokay,* literally the wine of royal odour. These three essentials, general figure and arrangement, proper blending and counterpoise of colours, and a scientific adjustment of the qualities called perfume, stand accordingly side by side in regard to the *beau ideal* of our undertaking. A trifle judiciously thrown in, of some odour comparable with deep bass, or even with a good treble, will often as completely change the quality of a bouquet as a bit of scarlet where previously there was no accent. This matter of the adjustment of odours is so important, not only in bouquet-making, but in reference to conservatories, where the glass often shuts in things that simply slaughter one another, that we shall probably return to it at some future time. Meanwhile we simply name it, as a point never to be lost sight of by those who would be artistic in their every-day life, and who would prove and understand what is incontestably true, though not perhaps seen on the instant, namely, that the "common things" of the world are exactly those which can be devoted the most satisfactorily to the production of the purely beautiful. Colours require to be disposed, as to tone and contrast, after precisely the same principle as that which guides a lady of sense in the choice of apparel. One who is a curiosity in respect of dress must never be expected to produce a good bouquet, let her try till her fingers ache; and contrarywise, if we want a gem in the way of bouquet-making, we may look with hope—well, certainly *not* to one dressed according to the "newest fashions" and within an inch of her life. All colours are good somewhere and at some time, though the best of the brilliant class may be utterly lost as to effect by mal-arrangement; while delicate ones may be made seem wan and worthless just for want of a little study of what constitutes a wise and friendly juxtaposition. Fancy, for instance, in the flowers of to-day, the effect of the sweet and tender yellow of the winter Jasmine alongside of a white; and, as a contrast, mark the effect of a bit of Maiden-hair Fern placed somewhat *en rapport* with a white Camellia, or of the timely introduction, amid pearly things, of a spray of the scarlet Euphorbia jacquiniæflora. There are flowers that should *never* be used in bouquets. These, however, we may speak of another time; for although it must be a remarkable plant indeed for which a suitable place could not be found in the open garden, it is quite a different thing when we have to bring the garden rays, as it were, to a point. There is not a plant in existence that is unfitted to give a charm or a tinge of splendour to scenes receptive of it; and in a certain sense, there is scarcely a plant that may not be utilized as a decorative object. But the bouquet has limitations. In dealing with plants and flowers we are bound not only to treat them kindly, but to treat them justly and honestly, and as members of a community entitled to its rights as well as ourselves. They will be sure to repay our care and equity. The goodness of even the simplest nosegay is dependent exactly upon the amount of thought put into it, and of desire on the part of the artist to be as fair and faithful to the gifts of Flora as we are bound to be to all other things.

ROYAL HORTICULTURAL SOCIETY'S ANNIVERSARY.

The annual meeting of the Royal Horticultural Society is announced to be held on Tuesday next at 3 p.m. The retiring members of the Council are the Bishop of Winchester, James Bateman, Esq., and G. F. Wilson, Esq. The names of Fellows recommended by the Council to fill their places are Lord Alfred Spencer Churchill, Major R. Trevor Clarke, and Lord Londesborough. The following are recommended by the Council to fill the several offices in the ensuing year:—President: His Grace the Duke of Buccleuch, K.G. Treasurer: Mr. John Clutton. Secretary: Major-General H. Y. D. Scott, C.B. Expenses committee-men: Mr. John Clutton, Mr. John Kelk, Mr. W. Wilson Saunders, F.R.S. Auditors: Mr. James Nicholson, Mr. John Gibson, and Mr. Robert Hudson, F.R.S.

Respecting the election of Fellows to fill the vacancies in the Council caused by the retiring members, we have received the following from the Rev. C. P. Peach:—"Allow me to state in your columns that the Rev. S. R. Hole and Mr. B. S. Williams will be proposed, together with Major R. Trevor Clarke (one of the nominees of the Council), to fill the places of the members of the Council who are vacating in rotation. I need not, after the recent notice of the Rev. S. R. Hole in your paper, add anything to show how fit a person Mr. Hole is to fill a space at the board, both mentally and physically. Mr. B. S. Williams is to represent the interests of the nurserymen, who, as a class, have done more than any others to promote the true interests of horticulture. I feel sure, therefore, that most of your readers will agree that we cannot appoint two better men to represent the practical interests of horticulture. I do not wish to say anything against Lord A. Spencer Churchill and Lord Londesborough, but I do not think we want persons merely to lend their names and to give an air of nobility to the Board. What guarantee have we got that they will ever attend? Hitherto, the Council of the R. H. Society have been more conspicuous at the provincial meetings by their absence than by their presence, and I have heard many deep and just complaints that the interests of the working bees of horticulture are disregarded. If those Fellows of the R. H. Society who are not able to be present will take the trouble to fill up their voting papers with the names of the Rev. S. R. Hole and Mr. B. S. Williams, and will send them to the Assistant Secretary of the Society previous to Tuesday, 11th inst., they will help to secure that practical horticulture be for once admitted to have a voice on our Council, and will break down the present rule whereby the Council themselves dictate to the Fellows who are to be their associates on the Council Board."

Since writing the above I have received a copy of the bye-laws, in which it is stated (110) "That if any Fellow desire to substitute the name of any other Fellow for that of any one recommended by the Council for removal or election in the said balloting lists, such

Fellow, within seven days after the said lists have been circulated, shall leave at the office of the Society notice in writing of every such proposed substitution." This does not seem to me to accord with Rule 81, and in the balloting list sent round, the foot-note, which purports to be a copy of the Form F., omits the important words, "The name of the Fellow mentioned in any notice given in pursuance of the byelaws for whom he chooses to vote," and the words are, "Any Fellow who disapproves of the names recommended above is requested to strike out such name as he does not approve, and to write opposite to each one so struck out the name of the person for whom he chooses to give his vote." This does not lead any Fellow who receives this balloting list to conclude he can only put in the name of one proposed according to Byelaw 110, and still more it does not allude to Byelaw 114, which is more stringent still. I maintain, therefore, that any Fellow who receives the majority of votes according to the balloting lists sent round, and which, if the instructions on the list are to be followed, may be returned with the names of any Fellow proposed by the Council erased, and another substituted in its place—I maintain, I say, that such Fellow will be properly elected.

NOTES OF THE WEEK.

—— The hardy spring-flowering Cyclamens (coum, vernum, Atkinsi, &c.) are now in brilliant bloom in Mr. G. F. Wilson's garden at Weybridge Heath, and have been so for the past three weeks. Such hardy gems should be cultivated much more extensively than they are at present.

—— We understand that the successful candidate for the clerkship at Kew is Mr. George Nicholson, Sharow Cross Nursery, Ripon, Yorkshire.

—— Of Dendrobium Hillii there is at present a magnificently flowered plant in the cool Orchid-house at Kew. The specimen in question though by no means handsome as regards growth, has on it as many as 20 flower-spikes, each averaging as many inches in length, measuring from the lowermost buds to the end of the spikes, which are densely covered with flowers, two spikes in several instances emanating from one bulb. D. Hillii is an Australian species somewhat in the way of D. speciosum, but not quite so compact either in habit or inflorescence.

—— A memorial was lately presented to Mr. Gladstone, signed by a number of eminent botanists, against the removal of the botanical collections at Kew to South Kensington. The reply, addressed to the Rev. M. J. Berkeley, says:—"Her Majesty's Government have not formed the intention of removing the collections to South Kensington, and should anything lead them hereafter to entertain the idea, they will take care that ample notice shall be given, and that the judgment of the persons most accomplished in botany shall be fairly weighed in the first instance."

—— We have just received from Mr. Rivers, of Sawbridgeworth, a boxful of ripe Oranges, large and beautiful in appearance, and exquisite in flavour, each fruit having attached to it a cluster of the bright green leaves of the tree on which it grew. They consisted of the Prata or Silver Orange, the Maltese Blood, the White Orange, and the Egg Orange, all fine specimens of their respective kinds. With here and there an exception, home-grown Oranges are scarcely worth eating; but the specimens before us clearly show that with the command of an orchard house, and a little heat, to keep out frost, and to help them at the commencement of the growing season, anyone can grow Oranges much better than any that are imported. Their fresh green foliage, too, and delightful odour render their appearance on the dessert table very welcome. A friend to whom we submitted some of these specimens pronounced them to be the best Oranges he had ever eaten.

—— A few winters ago (says the *Grocer*) we were consulted by a friend who had a small greenhouse containing half-hardy plants that only required a little protection during hard frost. Gas had been tried and was found to be ruinous to his plants; we therefore suggested that he should buy a dozen common cheap paraffin lamps, light them, and distribute them in different parts of his greenhouse. The experiment was tried, and found satisfactory. The present frost suggests that the same expedient might be used with equal success by others. Suitable lamps may be bought from 6d. each and upwards. In selecting them, they should be chosen with a large vase in proportion to the size of the flat wick, in order that they may continue burning all night without refilling or other attention. A large number of such small lamps has an advantage over a single large one, as by judicious arrangement their heat may be equally distributed throughout the greenhouse. It will be readily understood that whether one or many lamps are used, the total amount of heat given off is proportionate to the quantity of oil burned, provided the combustion is complete; and in using a lamp all the heat of combustion is utilised—none goes up the flue, as with stoves and fireplaces.

—— We learn from the *Athenæum* that when, in April next, Mr. Henry Cole retires from the post he has so long held at South Kensington, General Scott will succeed him as secretary. Mr. Cole will undertake the management of the London International Exhibitions.

—— We are informed that the following are the arrangements of the Manchester Botanical and Horticultural Society for the present year:—Floral and horticultural meetings at the Town Hall, Manchester, on Tuesday, February 11th; Tuesday, March 25th; and Tuesday, October 21. The annual Whitsuntide show, May 30th to June 6th; exhibition of American plants by Mr. Anthony Waterer, to open on May 30th; international exhibition of fruits, vegetables, and autumnal flowers, September 3rd, 4th, 5th, and 6th.

—— It was agreed at a recent meeting of the Scottish Arboricultural Society that the following deputation be appointed to visit the forests of Germany and France:—Mr. M'Corquodale, forester, Scone Palace; Mr. Thomson, deputy surveyor, H. M. Chopwell Woods; Mr. T. Methven, nurseryman and seedsman, Edinburgh; Mr. D. Syme, Edinburgh; and Mr. Anderson, jun., Perth. That the treasurer receive subscriptions from members of the Society, to assist in defraying the expenses of two of the deputation, the others to pay their own expenses. Dr. Cleghorn stated that he would draw out a plan of route for the deputation, and give them all the information he could for their guidance.

—— In the Report of the Council of the Manchester Botanical and Horticultural Society to the 45th annual meeting, held the other day, we learn that, notwithstanding an almost unprecedentedly wet and unfavourable season, the working of the past year has resulted in a gross profit of £555 18s. 2d., and in a reduction of the debt to the amount of £263 7s., a result mainly attributable to the successful Horticultural Exhibition held at Whitsuntide. We also learn that the total income of the Society for the last year was £4100; the total expenses of the great show at Whitsuntide £1213, and the receipts £2016, showing a profit of £800. This return was realised, notwithstanding that some 5000 or 6000 persons were admitted under cover of season tickets. At this Exhibition the sum of £652 was awarded in prizes, of which amount £86 was presented in special prizes.

—— Kew Bridge is to be opened to the public to-day, and great preparations have been made to celebrate the event. Among other influential gentlemen invited to take part in the proceedings, besides the Bridges Joint Committee and their officers, are the Lord Mayor and the Sheriffs of London and Middlesex, the High Sheriff of Surrey, Viscount Enfield and Lord George Hamilton (members for Middlesex), Mr. H. W. Peek and Sir R. Baggallay (members for Mid-Surrey), Lord John Manners, M.P., the Chairman of the Local Magistrates in Middlesex and Surrey, the representative of the late owners of the bridge, &c. The civic guests will be met near the Gunnersbury Station about 2 o'clock, when a procession will be formed, headed by the band of the Honourable Artillery Company. On reaching the bridge, which will be tastefully decorated, the key of the gate will be delivered up, and the bridge declared free for ever. The procession will then cross the bridge, drive round Kew Green, and return to the Star and Garter Hotel, where luncheon will be provided for eighty guests, the chairman on the occasion being Mr. James Montgomery. The opening of this bridge will be a boon to the numerous visitors to the Royal Gardens.

—— The Tyneside Naturalists' Field Club propose (says *Nature*) to obtain a complete record of all remarkable trees at present growing in the district embraced by the club, whether from their age, dimensions, or historic associations. Seventy or eighty such trees have already been catalogued from information supplied by the members of the club; and it is proposed that the record shall be as full and complete as possible, both in respect to letterpress and illustrations. The letterpress is to consist of the fullest particulars obtainable as to measurements and history, and it is recommended by the committee appointed that the illustrations be photographs taken by some permanent process, either Swan's "carbon" or the "Woodbury;" the expenses to be paid out of the general funds of the club, the catalogue to be supplied to members of the club for a small subscription, to the general public at a higher rate. It is obvious that such an illustrated catalogue will become very useful in after years, especially if the observations are repeated on the same trees at intervals. Though the Woolhope Club has already published in its reports photographs of a few remarkable trees, we do not recollect that anything of this kind has been hitherto attempted in a systematic way.

THE INDOOR GARDEN.

VANDAS.

Orchids generally are not remarkable for beauty, except when in flower; but some of the tropical Vandas, of which V. suavis and its congenor V. tricolor may be taken as types, are, when well furnished with fresh green foliage, truly elegant in appearance. The grand specimens of Vandas at Chatsworth are amongst the most remarkable that I have seen, one plant alone of V. suavis having borne no fewer than twenty fine spikes, on which a large proportion of the flowers were open at one time. When well grown, Vandas may, indeed, be considered the noblest of all East Indian Orchids, not even excepting Phalænopsids themselves, which is saying a great deal in their favour; but I refer more particularly to their graceful habit. Vandas require a warm atmosphere, rather close, and a plentiful supply of moisture both at the root and also in the atmosphere, more especially when growing; they should, indeed, never be allowed to become thoroughly dry at the root, not even when at rest. Vandas are apt to shrivel during dry, frosty weather, unless the atmosphere is kept moderately moist, and if once they become debilitated in an arid atmosphere, it requires a great deal of time and care to enable them to recover their former freshness; it, therefore, becomes necessary to keep up the moisture even during winter, while an occasional light syringing on bright sunny mornings is beneficial in preserving them in vigorous health. Dryness at the root at any season renders them liable to lose their lower leaves, and to become what is technically called "leggy"—a state of things to be avoided as much as possible. There are about twenty species in cultivation, but the following selection comprises the best of them:—

Vanda suavis.

V. CATHCARTII.—This reminds one of a remarkably robust growing Renanthera; it bears short, pendant spikes furnished with four or five waxy flowers, the sepals and petals of which are chocolate-brown, with yellowish transverse bars, the three-lobed lip having a peculiar thickened margin round its central lobe. This is yet a rare species in collections, though one of the fastest growers we have. It does best at the cool end of the East Indian house, and should be repeatedly syringed daily when in a growing state.

V. CŒRULEA.—This is remarkable on account of its blue flowers, a colour extremely rare amongst epiphytal Orchids. It is one of the finest species in cultivation, bearing spikes of nine, sixteen, or even more flowers, which vary in size from 3 to nearly 5 inches across. This species is found growing on trees, and its flowers in a wild state are of a more intense blue than those which are produced in our dull English climate. V. cœrulea grows at about the same elevation in Assam as V. Cathcartii does in the Sikkim Himalayas. It flowers during the winter months, a circumstance which makes it doubly valuable, and it lasts in flower fully a month.

V. INSIGNIS.—This is one of the finest species in cultivation, and one which must not be confounded with the variety of V. tricolor, long known and sold under this name. This plant is a native of Java and the Moluccas, and was figured by Blume in his "Rumphia" many years ago, though it has only recently been introduced to our gardens by Messrs. Veitch. It bears from three to seven flowers on a short spike. The sepals and petals are of a cinnamon-brown spotted with darker brown. The lip is three-lobed, the central lobe being concave and of a delicate lilac colour, white at the base. The true V. insignis is one of the rarest species in cultivation.

V. SUAVIS.—This fine old species bears pendant spikes of white flowers blotched with rich purple. There are several fine varieties of it in cultivation, of which the plant represented by the accompanying woodcut is one of the best.

V. TERES.—This is a distinct habited species, from the jungles of Burmah and Sylhet. Its terete foliage puts one in mind of Rhipsalis funalis, being of a bluish-green colour, and about as thick as a swan's quill. It bears erect spikes of large flowers of a delicate purple and white colour. The lip is streaked with crimson-purple, and suffused with yellow. This plant has been grown and exhibited in fine condition by Mr. Denning, gardener to Lord Londesborough, and when well flowered it may be considered to be one of the finest species in cultivation, though common in every collection. V. teres var. Andersonii is a better coloured form than the original species.

V. TRICOLOR.—This species and V. suavis resemble one, another in most respects excepting in colour, the flowers of tricolor having a yellow ground instead of white. There are several variable forms of this plant, two of the best of which are Dodgesonii and Russelliana, both named after enthusiastic amateur cultivators in the north.

The other kinds in cultivation are the following:—

V. Batemanni.
V. Bensoniæ.
V. cœrulescens.
V. cristata.
V. Denisoniana.
V. alpina.
V. gigantea.
V. Hookeri (rare)
V. Roxburghi.
V. ,, cœrulea.
V. Parishi.

F. W. B.

IMPORTING ORCHIDS.

Having been repeatedly questioned in reference to this important subject, perhaps a brief allusion to it here may not be out of place, more especially as it is generally acknowledged that there is much to do in this way ere even our great collections approach completeness. We are moderately rich in epiphytal species, but terrestrial Orchids are but poorly represented, even in our best public and private collections, and will no doubt continue to be so until private enterprise clears the way to their introduction to this country. There are many localities where an enterprising collector might do well. The vegetation of Central Africa is as yet comparatively unknown, though not unheard of, and even the plants of the southern or Cape district, including some of the finest terrestrial Orchids that could be grown, are as yet unknown to cultivators. The Orchids of Upper and Lower Assam, not to mention those of other parts of the great continent of India, are in the main unknown to cultivators. Suddyah in Upper Assam is a rich locality for new or rare plants, which grow profusely in the neighbouring mountains. It is difficult for any European to enter these mountain gorges, as the wild tribes object to this; they, however, allow natives to enter, and they will bring down both flowers and plants, or both, for a mere trifle. These tribes, the Mishmeys and Nagahs, come down to Suddyah and Debrooghan to trade during the winter season, and return during the warm season to their hills. An officer lately in the Bengal army has kindly supplied me with his experience of various parts of India, and mentions many lovely Lilies, Primulas, Rhododendrons, and Ferns which he has met with in profusion whilst hunting and shooting in the mountains, but which he has never seen in cultivation. A collector going out to India should understand something of the language, or else make up his mind to take into his employ a native who understands some English, or innumerable difficulties will be thrown in his way. Many persons in this country have resident correspondents in India, who could in some favourable instances send over a case or two of choice Orchids. Plants that are known to grow in any special locality may be obtained by giving the native tribes graphic coloured drawings of them, and offering a certain small sum to the first who succeeds in bringing them from the hills. In addition to the plants mentioned above, different species of Iris, Myosotis, Delphinium, and Fritillarias were noticed in the vicinity of Panchoa. Panchoa is a small village near to the Oontadoora Pass, at an elevation of nearly 17,500 feet. The Orchids do not reach that elevation, but many herbaceous plants scarcely less beautiful or interesting might be obtained from that locality. Many parts of the Himalayan range might be thoroughly well investigated, with both pleasure and profit, by any well-qualified collector.

Collecting plants, however, is but half the duty of a collector, for if great care is not taken in packing and transporting them, there is every probability of their being lost on their journey to this country. If possible Orchids and bulbs should be packed when at rest, or during the dry season. Packed tightly in a common packing case, among dry fibre or shavings, at that season they generally reach this country in good condition. If the plants are growing, it becomes necessary to pack them more carefully in a glass-roofed plant-case, allowing the growths plenty of room. It is of but little use to crowd growing plants together in a case, for if one commences to decay the evil soon spreads, and a mass of stagnant rottenness is the result. A few robust plants carefully packed have a much greater chance of reaching this country in excellent condition than great numbers closely huddled together. In the case of some epiphytal Orchids, it is possible to obtain them thoroughly well established by lopping off the branches of the trees on which they grow. The logs so obtained can afterwards be trimmed, and if nailed or screwed firmly to the sides of the cases in which they are to be sent home, there need be but little fear of their reaching their destination in safety. Phalænopsis Parishi and P. grandiflora packed in this manner have often arrived in excellent condition.

In sending Orchids to this country from abroad, care should be taken to ship them so that they will reach here during warm weather. Inattention to this has disappointed many, when the only cause for failure was their having been shipped off too late in the season, and their having reached this country during the winter months. The rigour of our northern winters has ruined the contents of scores of cases of valuable plants, often after a large amount of both capital and labour had been expended to collect them in their native habitats. In the case of glass-roofed cases, it is a good plan to make arrangements, if possible, with the captain or other officer of the steamer on which they are placed, to have them shaded during bright sunshine. These little details will soon suggest themselves to the collector, but it is as well to know and prepare for any adverse circumstances that may render the importation of living Orchids less certain than it is at present. Many bulbs, and the tubers of many terrestrial Orchids, are best brought or sent over when at rest, packed in their native earth. Many seeds of Palms and other tropical plants and shrubs are best sent over packed in moist clay or earth, as dryness is certain death to them. There are many seeds that will keep for years in a dry place without their vitality becoming impaired; but there are others, as the Amherstia nobilis for example, that cannot be imported or preserved for any length of time in good condition. Nature sows her seed as soon as it ripens and falls from the tree and in some cases this becomes an imperative necessity for the gardener or collector to adopt. Tubers of Habenarias, Satyriums, Disas, and many other of the South African terrestrial Orchids might be sent over in quantity during the resting season, packed in soil. Many of the European Orchids and rare or interesting Alpine or herbaceous plants may be sent by post, packed in a little damp moss, and wrapped in thin sheet india-rubber. Dr. Hooker recently observed, in reference to sending plants by post, that he had received living plants of a species of Vanda from India sent in that way. There can be no doubt of this being a convenient and inexpensive method of obtaining small parcels of living plants from abroad, when one has friends there to collect and send them. F. W. B.

Poinsettias.—Some of my Poinsettias are tall and straggling; will it injure or kill them if I cut them down after flowering?—J. C. [Do not cut your plants down yet; store them under the stages or on back shelves of your stove or warm greenhouse, and keep them dry and free from drip. If under the stage, lay them on their sides and rest them until they show decided signs of growing; then cut them back to two good eyes above the soil, shake them out of the pots they are in, and repot them into 6 or 8-inch pots, in a compost of three parts yellow loam and one of leaf-mould, with the addition of a little peat and rotten manure. As soon as they become established, pinch the two shoots that push from the eyes left at the second or third joint, and do not pinch again. The tops that were cut off should be cut up into single eyes, and treated as Vine eyes, or into pieces having two eyes, one to be inserted under the soil, and the other to remain above it in small pots, afterwards shifting them into their flowering ones. These operations are best done in May or June. Both the cuttings and old plants should be started and grown on in a brisk bottom heat, in a position as near the glass as possible. Give the eyes and cuttings the assistance of bell-glasses until they have become well rooted.]

Lisianthus Russellianus.—I observe that one of your correspondents complains of not being able to grow this plant as it was grown in the days of "Cuthill and Green." I was personally acquainted with Mr. Cuthill when he used to grow it so well, and, when I lived in that neighbourhood, I could grow it too. Upwards of twenty years ago Mr. Thomson, of Clovenfords, also grew it well. I have been in this quarter nearly twenty years trying to grow it, but have neither been able to do it satisfactorily myself nor have I seen it done (except in one instance) by any one else. The only difficulty I have found is that I can hardly call them pretty before they become a prey to thrips, which I have never yet been able to kill without, in the end, killing the plants. Our soil appears to be quite natural for them to breed in. When I grew the plant in question, within ten miles of London, I scarcely knew what a thrip was. With a good mellow loam, a little leaf-mould, and sand according to the nature of the loam, with a dung bed or stove, and constantly stopping whenever you can do it till about June or July, I see no difficulty in flowering plants of Lisianthus by the August twelvemonths after sowing in March. It is a long time to wait, but well worth it, if successful. I suspect that in these days of steam and telegraph, our present race of gardeners have not the patience required to grow it well. I had some nice plants in the spring, but they are gone.—One of the Old School.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Saccolabiums.—I am obliged to "G." for having pointed out my little mistake in reference to Saccolabium Holfordianum. I think with him that it is absolutely necessary that such errors should be pointed out as soon as discovered, so as not to mislead beginners in Orchid culture.—F. W. B.

Maranta Veitchii.—In your correspondent "G.'s" article about Marantas, (p. 544, Vol. II.) he says of Maranta Veitchii the blade of the leaf is upwards of 1 foot long, with a foot-stalk from 12 to 18 inches in length. I have a plant here with forty-two leaves, each averaging 18 inches in length by 10 inches in width, borne on foot-stalks 3 feet long. The plant, including the pot, is precisely 6 feet in height. This plant was purchased in the nurseries about eighteen months ago, and has been grown to the above size since that time.—W. H., *Tunbridge Wells*.

THE FRUIT GARDEN.

THE FRUITS OF ANCIENT ROME.

In respect of fruits specifically distinct in kind from one another, the ancients were well off. Grapes, Figs, Pomegranates, Almonds, Apples, Citrons, Dates, Olives, and several others are mentioned in the very earliest pages of human history; and by degrees, in one country or another, were added Walnuts, Chestnuts, Peaches, Pears, Filberts, Medlars, Mulberries, Cherries, Plums, Quinces, and the fruit of the Service tree. As with the culinary vegetables, certain fruits also were esteemed, more or less, that in England have never been recognised, in some cases because unsuited to our climate, as Jujubes, Arbutus-fruit, and the berries of the Cornus mascula. Most of the superior kinds, again, like the best of the esculent vegetables, were originally from the east; the Vine, for instance, probably a native of Armenia, was first brought into Europe by the Greeks; the Fig (which being said to have first come from Caria, a province in the south-west of Asia Minor, still bears the appellation of Ficus Carica), the Walnut and the Peach from Persia, and the Cherry from Pontus. The Pomegranate, though a native of Asia, was brought into Italy from Carthage; the Olive was introduced from Greece, and the Pistachio nut from Syria. Others, such as the Chestnut and the Hazel nut, which was the parent of the Filbert, belong to the spontaneous flora of Southern Europe. Some of these fruits were not conveyed westwards till the Roman power was reaching its acme; the Cherry, for instance, not until B. C. 73, or when Lucullus obtained his victory over Mithridates, and carried it home as a part of his spoils. Rome, the mistress of the world for so long a period, became, through acquisitions of this nature, a point or centre for their diffusion. However selfish may be the motive for accumulation, things must needs get distributed, if anyone will take the trouble to collect. Good comes in the end even of avarice; and lateral advantage to some one, of every kind of heaping together, whether it be flowers, or books, or pictures, that are amassed. This is the true sense of the axiom that "charity begins at home;" it applies alike to nations, and to the acquisitiveness of individuals; and hence we find that some 120 years after it was first seen in Rome, or in A.D. 48, even this comparatively insignificant Cherry was carried into Britain, then an island of barbarians. To the Romans, likewise, England owes the introduction of the Vine and the Chestnut, and almost certainly, too, the introduction of the Turnip and the Carrot, Beans, the Beetroot, and their favourite Cabbage plant, for the name of "Kale" occurs in the oldest English records. In reading of the pomps and vanities of that great people the Romans, their wars, superstitions, profligacy, and barbarities, we are apt to forget sometimes how they fostered the minor details of civilization. In the midst of their conquests and cruelties, they never lost sight of the useful and beneficial arts of life, showing themselves willing learners of whatever they found new and serviceable, and at the same time dispersing their knowledge over the countries they vanquished. The benefits which they conferred were often of a nature calculated to alleviate the miseries caused by the sword; if the benefits did not appear immediately, they have, at all events, outlived the miseries, and in many instances they form the noblest monuments that remain of the ancient presence—the Chestnut to wit, and the Vine, in our own country. Take only that glorious old Chestnut at Tortworth, to say nothing of the thousand princely examples in our parks; who can be other than glad beneath its calm and antique shade? A fair and consistent man, who would do unto others in the way that he himself desires to be done by, will always ask first what good has been effected by the nation or the individual waiting judgment, and leave the objectionable and the unamiable points to the last. So governed in his spirit, he lives, at all events, in an atmosphere charged with pleasant things instead of painful ones, a matter more important than he may think, since men's own characters and capacities for happiness are coloured by the surroundings they spin, like a silkworm, from themselves.

To what extent the multiplication of "varieties," technically so-called, of any of the Romans' fruits may have been carried prior to the Christian era, is not now ascertainable. It is certain, however, that under the Çæsars, the Romans possessed of Pears more than thirty-six varieties, and of Apples at least twenty-two; those which answered to what we should now-a-days call dessert fruit, being elegantly termed Melimela or "honey Apples." Cherries they had in about eight different kinds, Figs also in variety, and a very considerable number of sorts of Plums, including one said to have been raised near the renowned Syrian city of Damascus, and thence called the Damascene. This last, judging from the epigram in Martial, had plenty of stone and very little flesh, and perhaps corresponded to the modern Prune. Whether our nineteenth century "Damson" is a descendant of the ancient Damascene as well as heir to its name, is an open question. The Vine, being sedulously and universally cultivated, of course presented many varieties of fruit. One of the sorts had the berries so remarkably elongated that they were termed Dactylides or "finger Grapes"; while some of the varieties were adapted for being dried, as long before in Asia, into Raisins. Here it may be interesting to note that the juice of the Quince was by the Romans mingled with honey, so as to make a pleasant conserve, the antetype of our modern marmalade; the kind employed for this purpose being one that was yellow both inside and out, and thence called Chrysomela. Marmalade, a term derived from the Portuguese words for "bitter Apple," literally and properly designates only such a preparation as that in favour with the Romans, *i.e.*, one from the Quince *pur et simple.* The metaphor by which the name has been extended to the familiar and delightful sweetmeat manufactured from the Citrus Bigaradia is, however, perfectly legitimate; the very best of the Roman conserve was probably still inferior to the delicious dulcamara which at our breakfast tables makes us thank heaven for the Seville Orange—and for those who manipulate it. Among the fruits little cared for by the Romans, though profoundly in favour with ourselves, were Apricots, probably because of inferior sorts only, and those which are commonly called "bush fruits"—or Gooseberries, Currants, and Raspberries. These three do not appear even to have been known to them; while their acquaintance with the Strawberry was only as a wilding of the hills, or brought down therefrom, just as cloud-berries, the produce of the Rubus chamæmorus, find their way occasionally into the fruit shops of the north of England, or as the Whortleberries of the moors where sportsmen go for grouse, come, in September, into the market places. Even at the present day, the climate of Italy is found unsuited to the generous and always welcome little Rosewort; it succeeds only upon the higher grounds, and the same is to be said of the fruit-bearing species of Ribes, which flourish, as regards countries, in inverse proportion to the Olive and Fig. Where these hardy children of the north—the Gooseberry and Currant—attain perfection, the former are exotic curiosities. Contrariwise, where the Fig and Olive prosper, the others stand abashed, turn to evergreens, and forget their language. Mount Ida, close to the Hellespont, gave its name to the Raspberry, Rubus Idæus. The fruit, however, seems to love England better than the famous eminence where the goddesses, appealing to the verdict of Paris,

"the veil divine
Cast unconfined, and gave him all their charms."

Leo Grindon.

GRAPE GROWING AT CASTLE KENNEDY.

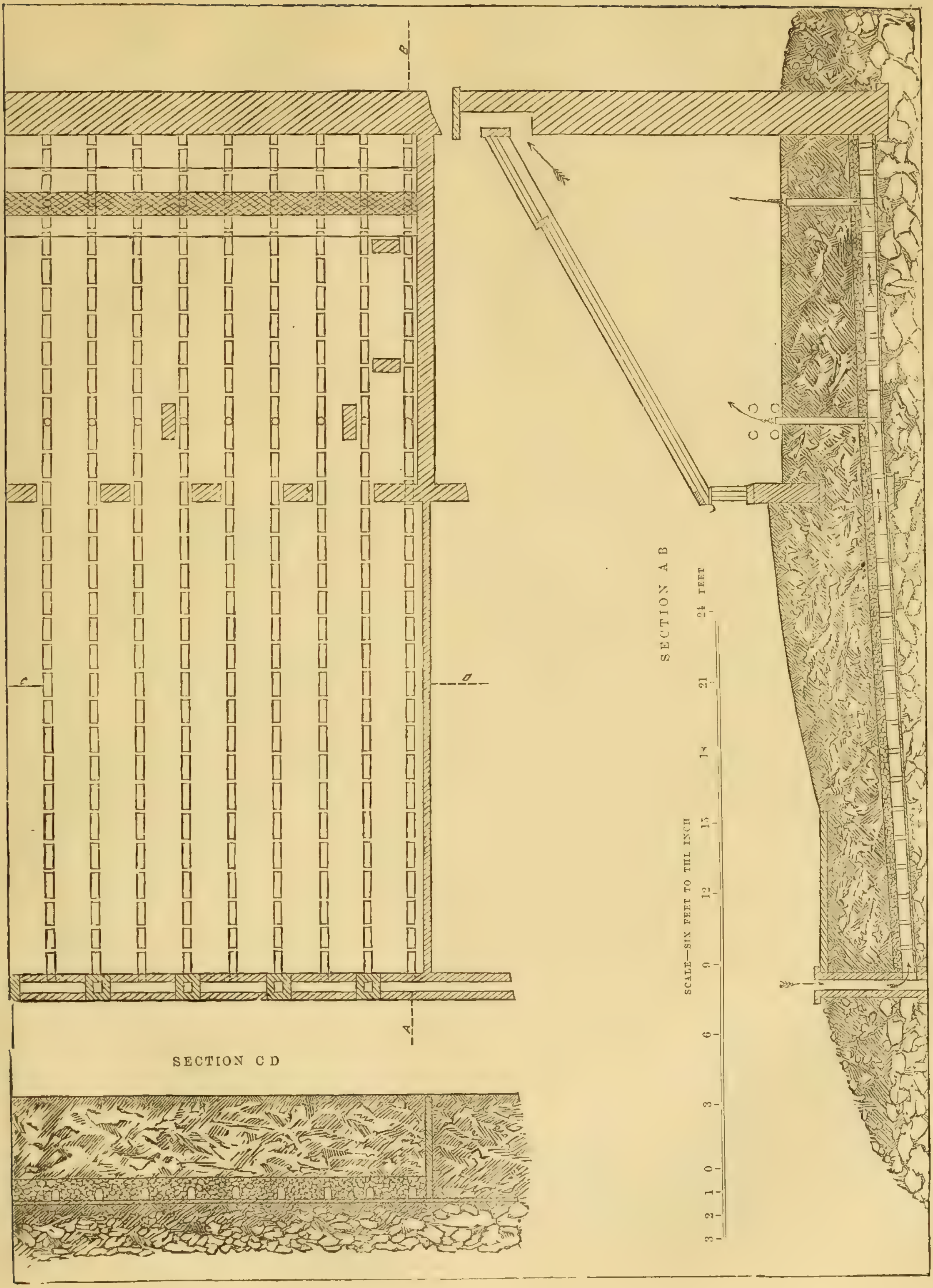
This fine place, belonging to the Earl of Stair, in the west of Scotland, has for years enjoyed a well-merited reputation for the size and excellency of its Grapes. At the first International Fruit Show at Edinburgh, Mr. Fowler showed some magnificent fruit. Muscats and Hamburghs of from 12 lbs. to 15 lbs. per bunch, White Nice 17 lbs., and others in protion, were something to charm the eyes and gladden the hearts of Grape growers. The bunches, too, were not only large, but the berries were also very fine and the finish perfect. Since then, Mr. Fowler has kept in the front rank among Grape growers, though at the Fruit Show in Edinburgh, in 1871, he allowed a pupil of his own—Mr. Johnson, of Glamis Castle—to run in and win most of the premier prizes. Last September, however, at the great International Fruit Show at Glasgow, Mr. Fowler again carried off many of the first prizes. "How does he grow his Grapes?" is a question often asked. Well, I took a long journey to try and find out, and as Mr. Fowler has no secret in the matter that he cares to keep back, the fault will be mine if I do not succeed in revealing his whole art of Grape culture.

The position of the Vineries at Castle Kennedy is by no means favourable. The entire demesne is almost a peninsula, enclosed between two splendid sheets of fresh water, called the Black and White Lochs. The kitchen garden is pitched at a low level, close to a canal that connects these lochs, intermixes their waters, and keeps them at one level. The Vineries are within a stone's throw of the canal and a very few feet above its level. In such a position it is no marvel to learn that Grape growing used to be a work of difficulty. The Grapes kept the gardeners in hot water—in revenge, probably, for their roots being kept so near to the cold. Gardeners there could succeed in other matters, but most of them failed, more or less, in Grape growing. The most brilliant prospects were wrecked again and again on the road from "show" to finish. The growth was strong, the "show" promising, the first swelling free; and then came the stoning, colouring, finishing—no, not the finishing; that consisted of nothing but shanked red berries. When Mr. Fowler took possession, under a former Earl, he was informed that if he could grow good Grapes—well; if not, he must go the way of former gardeners. Such instructions would have intimidated many young men; they only, however, served as a stimulus to action in the case of Mr. Fowler. A glance at the situation suggested the probable remedy; the Vine roots must be got up and kept out of the water.

It is, however, a singular fact that many of the best Grapes in the country—those at Trentham, Chatsworth, Drumlanrig, and Castle Kennedy, for instance, are grown within a few feet of the water level; and I have heard the excellency of the Grapes in most of these places attributed to their near proximity to the water. This is, however, the very opposite of the truth; for I believe in all these places the roots are either tempted out or forced out of the water by artificial expedients, and the Grapes largely owe their superiority to the skill and success with which this is done. Even aeration, as Mr. Fowler's first experiments proved, will not suffice if the roots are permitted to reach water mark. The concreting or building out of Vine roots from cold subsoil and colder water has long been a favourite practice with the best cultivators. Where the water is lower down or the subsoil less ungenial, deep drainage, or the artificial elevation of Vine borders above the surrounding surface has been adopted as short cuts to the same end, viz., the enticing the roots to the surface and keeping them out of the water. In addition to this various attempts have been made to aerate the entire border by means of a layer of rubble or coarse stones resting upon a network of drains, rising to the surface at both ends, to open or shut at pleasure. It is obvious that by some such expedients a good artificial root run may be formed for Grape Vines, or for other trees in any situation, even over a marsh, a lake, or a sea of mud. With pillars to support an artificial base of stones, a good border may be made above, wholly independent of what is below. By rendering the bottom impervious to roots, and giving it sufficient pitch to prevent water from lying upon it, we may begin *de novo*, and form the border of whatever we choose it shall consist. This is exactly what Mr. Fowler did. The foundations of his new borders were laid in two inches of solid concrete, forming a sharp, impenetrable dividing line between the old earth and the new borders. All on the upper side of the concrete was for the Vines; all below it was forbidden ground. Having made the border impenetrable, the next point was to lay it dry. This was effected by forming a capacious drain in front, at a lower level than the concrete, and covering the surface, from front to back, with rows of 4-inch drain tiles, at intervals of 2 feet. The spaces between the tiles, as well as a few inches over them, were then filled in with stones, using the largest ones at the bottom, set on edge as hollow as possible, and the smaller ones at the top, with a surfacing of gravel, the whole porous mass averaging 8 or 9 inches in depth. An inverted turf shuts the door of the drainage against the soil of the border, and preserves it perfect for many years. The soil used was good maiden loam mixed with turfy fibre, enriched with a liberal sprinkling of inch bones, and about one load of lime rubbish to ten or twelve of loam. This was all—no manure nor nostrums of any sort. Neither is there any charm in the depth or width or form of either the borders or the Vineries. Both are wide; the houses rather lofty, and the borders of an average depth, the surface being rather more sloped than the bottom, as will be seen on an examination of the accompanying illustration.

So far the borders vary little, if at all, from thousands of others. Thorough drainage, fibry loam, lime debris, inch bones, roots near the surface, are universal items in Vine borders. Well may doubters ask is there nothing more?—no better instruction than this to be got at Castle Kennedy? There is, and it is this: the importance of ventilating the earth in which the roots live, as well as the atmosphere in which the tops grow. This is the secret as regards success, if there is one to be found at Castle Kennedy or elsewhere. The lines of drain tiles carried from the water drain in front to flued or pigeon-holed drain inside the Vineries, are neither socket pipes nor laid end to end, but placed 2 inches asunder, as will be seen on reference to the plan (C D). Then at intervals along the water drain square hollow pillars or shafts are carried up above the surface furnished with hinged lids, to be opened or shut at pleasure. Other two drains come to the surface inside the Vineries, one under the front pipes, the other under the grating at the back of the house, as shown in the section. All these can be opened or shut at pleasure. In general terms the outside one may be shut in cold weather and opened in warm, and early in the season they are shut at night and open in the day; whereas in summer and autumn they often remain open night and day. They are seldom opened till March, opened by day and shut by night till July, and left open till October. There might seem to be little advantage in these arrangements, and in fact, little or no circulation of air through the drains or borders. It is, however, quite otherwise. The air passes freely through the drains into the house, and not infrequently a reverse motion is also observed from the houses into the drains. The proper working of the drains doubtless largely depends upon the taking of the house atmosphere into partnership with them. Singly and alone the drains would neither aerate nor warm the border much, if at all. In fact I have seen a similar system of drains, one end terminating outside the house, and the other coming from the front of the borders, resulting in a total stagnation of air. So placed there was not sufficient disparity of temperature between the two shafts to disturb the equilibrium of damp stagnant air beneath. But bring up the air drains in close proximity to the hot-water pipes, or even under the gratings of a warm Vinery at work, as at Castle Kennedy, and the drains begin to work at once. Even in September, when the difference between the external and internal atmospheres was at a minimum, the draught from the gratings at the back agitated a paper held near them. Of course the greater the disparity between the external and internal atmospheres the more rapid will be the circulation. As a system of ventilation by which a constant change of air is provided without draughts, I consider these air drains worth ten times their cost. By leaving, as is mostly done at Castle Kennedy, more or less air on always at the top of the Vineries (as will be seen in the section), a stagnant or effete atmosphere becomes impossible. It would be difficult, indeed, to over-estimate the importance of the passage of so much air, not only through the drains, but also through the entire substance of the border, the temperature of which is thus sensibly raised several degrees higher than it otherwise would be. The influence of so much genial air upon the texture of the borders is perhaps equally, if not more, important than the increase of temperature. The soil continues sweet and porous for years, and at all seasons it is filled with healthy rootlets active in quest of food.

The reason why so many young Vines thrive so well in most places at first is because the new borders are aerated in the best sense of the term. The turfy loam is permeable to air in all directions, and the roots run into it freely. By-and-by the fibres disappear from the loam, the mass gets consolidated in spite of the hard matter mixed with the earth, and then follows unwholesome growths, shanking, and other evils to which Vines are liable. Aeration seems to



VINE BORDERS AT CASTLE KENNEDY.

prevent these. The borders at Castle Kennedy, after twelve or sixteen years, are as sweet and full of roots as ever. There are no annual root rottings by the rains; no seasons of sour sterility or partial and total paralysis or arrestment of vital action. On the contrary, root growth seems continuous, and the supplies for the Vines, in all stages of growth, seem ever in advance of the demands. The possibility of a back action of air from the Vineries to the borders has already been alluded to. There is no doubt that this occasionally takes place, and doubtless a great portion of this heat is also sent up through the border. The air that comes through from the outside is likewise well charged with moisture in the drains before it enters the houses, and the constant supply of fresh moist air is insensibly, as it were, brought in.

Some have objected to this mode of aerating Vine borders, on the ground that the drainage would be excessive in dry weather, and that the hot dry air, passing in and through the borders, would lick up any moisture that remained, and thus create a water famine. Opposed to these objections may be placed the watering pot and hose, and shutting down the lids of the drains. There is no more reason that we should use them during severe drought than when the thermometer is at zero, and thoroughly drained Vine borders often need a thorough soaking, whether aerated or not. Besides we are not obliged to use a power we do not want merely because we happen to have it. Wherever aerated Vine borders have been fairly tried they have succeeded admirably. Mr. Fowler has planned such borders at Glamis Castle, Sir W. Wallace's, Carrigorman, and elsewhere, and in all cases they have given the utmost satisfaction. I do not say that by aeration alone superior Grapes may be grown; great care, skill, and ability have doubtless much to do in achieving success. But this much I know, that whereas clever men grew Grapes at Castle Kennedy little larger than white Currants, we have seen bunches from the same gardens over 17 lbs. in weight, and with berries approaching the size of Damsons. Hence it follows that Grapes of the highest excellence may be grown on well made aerated borders. Mr. Fowler does not expend the strength of the Vines on a few monster bunches; on the contrary, he takes a full crop every year. The Vines are in robust health, by no means young, and look like doing in the future as well as they have done in the past. D. T. Fish.

Vitality of Fruit Tree Cuttings.—The report of the Horticultural Society of the colony of Victoria gives some facts proving that scions and cuttings retain their vitality much longer than has been generally supposed. The Society had a case of fruit tree cuttings forwarded to it from Chiswick. These cuttings were from among the prunings taken off in October. They were forwarded in December, and reached Victoria in about six months after they were cut from the trees. On their arrival in April, "there being no stocks in condition for grafting," they were kept over for another four months, or until the following August, when they were worked. Thus, more than three quarters of a year elapsed from the time the cuttings were taken from the parent tree at Chiswick, until they were used as scions at Victoria; but notwithstanding the delay, the result is, that out of the consignment, five Vines, eight Plums, twenty-four Figs, sixty-six Apples, and seventy-two Pears have been saved. The importance of this fact is not to be overrated.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Two Varieties in one Apple.—Professor Asa Gray reports receiving an Apple from the Smithsonian Institute gathered from a tree of Spitzbergen which was on the surface one half Spitzbergen and one half Russet. A tree of the latter fruit stood about 200 yards off. Several cases of this sort are known, in which, as in this, the division is into two exactly equal parts of the circumference, the line of demarcation being abrupt.

Ill-ripened Peach Shoots.—One of the surest indications of imperfectly ripened wood is the pushing of the leaf-buds, simultaneously with the flower-buds. When the wood is hard and perfectly matured, the flowers always open first and freely, and are large and of good substance; but when the leaves push hurriedly at the same time they should be pinched clean back to the germ again with the finger and thumb, otherwise the flower-buds, after pushing a certain length, will stop and eventually drop off without opening. In pinching the leaf-buds back, care should be taken to do it in time—in fact, as soon as the point of the bud can be got at with the finger nails; but the base of the bud should be left, and it will not fail to break again. Sometimes it is necessary to pinch twice. This practice will often ensure a good "set" of fruit that would otherwise be a failure.—S.

GARDEN DESTROYERS.

THE OAK-LEAF ROLLER.

(TORTRIX VIRIDANA).

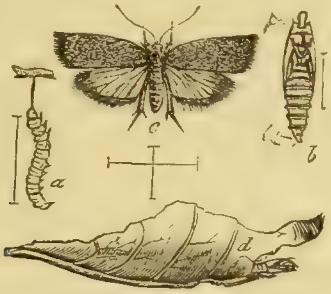
The Oak has many insect enemies, some of large size and very destructive; but the tiny little moth of which we are about to give an account makes up for its minuteness by its numbers, and does as much mischief as any of them. Fortunately it is not always, nor even very often, that it appears in such great numbers as to do serious injury; but it is always with us in sufficient abundance, and not rarely in too great abundance. The perfect insect (Fig. 1, *c*) is a lovely little moth with the fore wings above of a uniform pale emerald green with the anterior margin whitish or yellowish; the hind wings are pale grey with a white fringe. The size is indicated in the above woodcut. The caterpillar (Fig. 1, *a*) varies from lead coloured with a greenish tinge or a dirty greenish yellow to a rich dark green. The head, a plate or shield on the first segment, the feet, and a quantity of little dots, from which a stiff hair springs, scattered over the body, are all bright shining black. The chrysalis (Fig. 1, *b*) is black or brownish-black, and has a double row of small spines on the margin of each segment. Its life history is as follows:—

Under normal circumstances it feeds exclusively upon the Oak; when hard pressed it may occasionally take to other trees. In some parts of Germany, in 1838, when the Oaks were totally destroyed by frost, it took refuge in the Ash trees, which had suffered less, and changed to the chrysalis in their rolled up leaves, but unless under such exceptional constraint it confines itself to our two indigenous varieties of Oak (Quercus pedunculata and Quercus sessiliflora), a fact which we may incidentally remark strengthens the view that these two so-called species are only varieties of the same tree, and it is said to give the preference to the former because it is usually first in leaf. It has been observed that the American Oaks, although growing close beside our English Oak, have not been touched by it, while the latter have been defoliated. This peculiarity it may be well for Oak lovers to remember, especially if they reside in a district which suffers from the presence of this insect. The eggs are laid in the end of summer or in autumn and remain dormant throughout the winter. Some difference of opinion has existed among observers as to the place where they are laid, some stating that they are simply glued on to the bark in the neighbourhood of the eyes which are to come out as buds in spring, others holding that they are in some way introduced into the bud itself. There is something to be said for both views, but the structure of the ovipositor of the female moth seems to settle the question. It has no apparatus for piercing substances of even moderate hardness, and we therefore go with those who say that it glues its eggs upon or about the embryo buds of next season. As soon as the eggs are hatched the young caterpillars commence upon the young buds, and make their way into the interior, a circumstance which, together with the sickly appearance of the bud into which the grub has entered, has given rise to the idea that the eggs are deposited in the bud. Ratzburg has observed, for instance, that when he has caught the caterpillar in the bud at an early stage, before it had eaten much, it lay close under the outer scale in a fine web surrounded by atoms of debris. This, however, is not inconsistent with either view. They do not, however, long remain in the bud; as soon as the leaves are out, which is usually before they have eaten farther into the bud than through the two outer leaves, they leave it and take to the expanded leaves, and one of their first steps is to make themselves houses by rolling up the leaves like empty cigaritos. They affect no particular form for the roll, sometimes rolling it up transversely, sometimes longitudinally, and at other times obliquely.

The process of rolling it up and tying or strapping it up in the position it is to maintain is very curious. Those of our readers who are accustomed to a country life, or who even only now and then pass a few days in the country, must have often seen leaves so rolled up, but probably few have taken the pains or had the patience to watch the process, and yet if they will think a little how they would set about to do it themselves with the simple means that the caterpillar has at its disposition, we imagine that they would give it up as a puzzle that they could not solve. It is all done by the judicious application of straps. The only appliances or apparatus which the caterpillar has are its own weight and a reservoir of glue or liquid silk in its salivary glands, which is adhesive at first, but rapidly hardens when exposed to the air. This it can draw out as a thread of silk by allowing a drop of it to stick to any point, so that on drawing back its head the silk is drawn out of its mouth as a thread. With this simple machinery, it rolls up the leaves in all the various modes in which we find them.

There is, however, one requisite without which it cannot get on at all, and that is a certain amount of curvature in the leaf before it begins. If the leaf were perfectly flat it might strap it as it liked, and would never get it out of position. But given the smallest bend, it has a lever to act on, and the difficulty is over. It attaches a thread on one side of the curve of a concave part of a leaf, then tossing its head to the other it fixes it there; then passes it back, and wagging its head to and fro fixes it alternately on each side by a simple touch. It thus gradually makes a broadish flat strap, consisting of many threads stretching over the hollow of the bent leaf and ties the opposite walls of the curve together; that fixes a certain amount of curve to start with. But how is it to get it further bent? Simply by repeating the operation, but this time obliquely over the first straps, and as in doing so it rests its weight on them, that causes them to sink a little, and brings the points of attachment a little nearer, and that increase of nearness is secured and maintained by the second set of threads or straps.

As the breadth of the roll increases, the number of separate and independent straps is increased too. This process it repeats again and again, until the leaf is rolled up as much as it desires. When a stiff, unbending nerve or midrib stands in the way, and refuses to bend, it eats out a little bit here and there from the rib, exactly as a carpenter saws half through a lath that he wishes to bend, and thereby makes it yield to the extent desired. After the roll is complete, the caterpillar uses it both as its house and larder. Being provided with an opening at each end it has a ready mode of escape from intruders, and it can feed both inside and out; and as one leaf is not sufficient food for the whole life of a larva, which may eat four or five, it either has recourse to neighbouring leaves, retiring to its house as a castle of refuge when necessary, or, if a new house becomes necessary, it recommences the process of rolling a new leaf. As in all insects that spin cocoons or line their abodes with silk, so with these the flow of silk from the salivary glands becomes greater as the period of passing into the chrysalis approaches. Then they seem to have more than they know what to do with. They are then found hanging in numbers by threads from the trees; webs may be seen on every side, and numbers of them may be found spinning them in common, enveloping leaves and twigs together in a white silken covering.



The Oak-leaf Roller.

The larva usually passes into the chrysalis in the rolled leaf, the interior of which it then lines with silk, but sometimes out of it in crevices in the bark, or in the brushwood. It is to assist the perfect insect in emerging out of the rolled leaf that the chrysalis is provided with a double row of little spines at the margin of each segment. By means of these it wriggles forward to one of the mouths of the rolled leaf, so that when the perfect insect emerges it has only to step out of the roll into the open air; and, when the insect has changed into the chrysalis, in its roll, we can see the black hulls of the chrysalis protruding at its mouth, after the flight of the moth. The perfect insect comes out towards the end of June, and at that time, by beating the branches in woods infested by them, they can be knocked down in showers. They lay their eggs chiefly on the topmost branches, at least we may infer this from the topmost buds being especially attacked, and sometimes quite full of caterpillars, and from the tops of the trees being first denuded of their leaves. When its ravages are severe, whole forests are denuded of their leaves, so that they look as if struck by lightning. The effect of denuding the tree of leaves is of course to retard its growth, and, if repeated often enough, to kill the tree.

This species occurs in Britain, France, Belgium, and Germany, wherever the Oak abounds. No satisfactory remedy or prevention for its ravages has yet been found. Bechstein proposed to set fire to the caterpillars hanging by threads, and then to crush them. Ratzeburg suggested gathering the chrysalids by sweeping down the rolled leaves by a strong broom or rake to the foot of the tree, and then destroying them *en masse.* But neither plan seems very practicable. Boisduval regards the increase of small birds as likely to be beneficial, and in support of this recommendation mentions that the insect was less numerous in the forests of Senart, St. Germain, and Fontainebleau, than in the Bois de Boulogne, where, of course, small birds were scarcer. Ratzeburg attaches little importance to the efforts of birds, because when the ravage is at its worst, he says they are then breeding and retire into the woods; but still they have to be fed, and general opinion, we think wisely, now recognizes their importance.

It has been observed that whenever any species is increasing in disproportionate numbers, some enemy, parasite, or destroyer increases in a proportionate degree. This is the case with the ichneumons and parasites that feed on the Tortrix viridana. On some occasions when they were numerous Boisduval found that out of a large number which he attempted to rear the one-half had been rendered abortive by ichneumons. But for some such check there would seem to be no limit to their increase, for they are so ingeniously protected by their rolled leaf that neither birds nor other enemies, rain nor cold can get at them. The only weather that seems to reach them is heavy rain for some days in warm weather, just when the caterpillars are coming out, and before they have got their houses made. Frost they can stand, unless it were to be so late and severe as to destroy the leaves on which they feed. As one fire burns another out, so sometimes the cockchafer starves the caterpillar to death by eating up all the leaves, but this is no satisfaction to foresters, who have no preference for one agent of mischief over another. A. M.

Woodlice.—By the following very simple method, frames and pits might be kept comparatively free from woodlice; at any rate the insects might be so far subdued by it as not to be injurious to plants. Put a cold boiled or roasted Potato into a small flower-pot; cover the Potato with moss, leaving a little hanging out of the pot by way of enticing the insects to enter; then lay the pot on its side in a corner of the frame. Woodlice feed in darkness, and at the approach of day they trot off to their hiding-places in cracks and crevices, or amongst the loose soil or bark; the moss is, therefore, necessary to induce them to remain in the pot, to which they will flock in hundreds, after having once tasted the Potato. Every morning the pots should be taken out of the pits and the insects destroyed. The same bait will serve for a week or longer. If properly attended to, half-a-dozen pots so prepared will soon clear a frame of this troublesome insect. Another plan is to pour boiling water round the sides of the frame or pit, taking care in doing so, however, not to injure the roots of plants.—J. M. H.

An old physician was declaiming, in our hearing, the other day upon the propensity which a majority of people display for eating unripe fruit and vegetables. Said he, "There is not a fruit or vegetable growing in our gardens that is not best when arrived at maturity, and most of them are positively injurious unless fully ripe."—"I know one thing that ain't so good when it's ripe as 'tis green," interrupted a little boy, in a very confidential, but modest manner.—"What's that?" sharply said the physician, vexed at having his principle disputed by a mere boy. "A Cucumber," replied the lad The doctor winked at us with both eyes, but said nothing.

THE FLOWER GARDEN.

SOUCHET'S NEW GLADIOLI.

Monsieur Souchet, of Fontainebleau, who is unusually successful in the cultivation of Gladioli, has again raised some new kinds, remarkable for their size and perfection of form, as well as for new colours. Among them, the following will be found desirable additions to any collection, viz.:—

Addison.—Spike large; flowers very large and of a deep amaranth, striped with white. A lovely plant of middle height.

Benvenuto.—Spike long and striking; flowers very large, much open, of a pink or pale orange colour, very brilliant and transparent, spotted with white. Plant of a middle height.

Elvire.—Spike long and fine; flowers large and pure white, edged with carmine. Plant middle height.

Eva.—Spike ample; flowers large, ground colour white tinted and shaded with rose and pale lilac. A fine flower. Plant of middle height.

Figaro.—Flowers large and open, rose or reddish-orange, tinted with a deeper shade, and having large spots of pure white. A grand plant.

Le Phare.—Spike very long; flowers large, brilliant bright red and very open. Plant medium height.

Lulli.—Spike good; flowers large and perfect; bright cherry slightly tinted with orange; ground colour clear, the inferior division striped with carmine. Plant of middle size.

Macaulay.—Spike long and splendid; flowers large, deep crimson slightly tinted with violet and spotted with deep carmine; centre clear and transparent. Plant of middle height.

Margarita.—Spike very long; flowers large with a white ground tinted with carmine. A strong growing and beautiful variety.

Octavie.—Spike long; flowers large, of a pretty pale pink, slightly edged with red, and lined and spotted with pure white; centre very clear. A low growing variety, but one that is exceedingly beautiful.

Reine Blanche.—Spike very long; flowers beautiful; pure white with small spots of deep carmine.

Venus.—Spike very long; flowers large; pure white flushed with pale pink. A splendid variety of middle height.

E. A. Carriere.

ROSES SUITABLE FOR A SMALL GARDEN.

Would you kindly name the best kinds of Roses for growing in the West Riding of Yorkshire. I should prefer those that smell the sweetest. Is not there a very dark climbing Rose called "Old Fulgens?" Would you please include about a dozen names of the best climbers.

J. W. R.

[The following are recommended by Mr. George Paul as a good selection for anyone requiring a collection of about sixty kinds:—

HYBRID PERPETUALS.
Alfred Colomb
Abel Grand
Annie Laxton
Baronne Haussman
Baroness Rothschild
Beauty of Waltham
Bessie Johnson
Caroline de Sansal
Centifolia rosea
Charles Lefebvre
Charles Rouillard
Camille Bernardin
Comtesse de Chabrilland
Dr. Andry
Duke of Edinburgh
Edward Morren
Emilie Hausburgh
François Louvat
Jean Cherpin
John Hopper
La France
Lyonnais
Madame Caillat
Madame Geo. Swartz
Madame Victor Verdier
Madame Rivers
Madame Therese Levet
Marie Baumann
Marie Rady
Maréchal Vaillant
Maurice Bernardin
Marguerite de St. Amand
Nardy Frères
Pierre Notting
Princess Louise
Prince Camille de Rohan
President Thiers
Reine Blanche
Reine du Midi
Senateur Vaisse
Thyra Hammerich
Victor Verdier
Vicomtesse de Vesins

NOISETTE.
Maréchal Niel
Triomphe de Rennes
Celine Forestier

TEA.
Belle Lyonnais
Gloire de Dijon
Madame Berard
Madame Falcot
Madame Villermoz
Madame Margottin
Souvenir d'un Ami

BOURBON.
Catherine Guillot
Souvenir de la Malmaison

HYBRID CHINA.
Blairii, No. 2
Paul Ricaut
Madame Plantier
Miss Ingram
Paul Verdier

The following are twelve good hardy climbing Roses:—

FOR WALLS.

TEA.
Belle Lyonnais
Climbing Devoniensis
Gloire de Dijon
Madame Berard

HYBRID PERPETUAL.
Duke of Edinburgh
Glory of Waltham
Madame Julie Daran
Souvenir de Dr. Jamain

NOISETTE.
Celine Forestier
Maréchal Niel
Rene d'Or

HYBRID CHINA.
Vivid

FOR PILLARS.

HYBRID CHINA.
Fulgens
Madame Plantier
Vivid

EVERGREEN.
Félicité Perpetué
The Garland

HYRRID PERPETUAL.
Anna Alexieff
Climbing Victor Verdier
Jules Margottin
Jean Goujon
Maréchal Vaillant
Marie Cirodde
Souvenir de M. Poiteau.]

The York and Lancaster Rose (Rosa versicolor.)—Parkinson, in his "Garden of Pleasant Flowers" (1656), thus describes this Rose:—"In the form and order of its growing, Rosa versicolor is nearest to the damaske Rose, both for stem, branche, leaf, and flower. The difference consisting in this, that the flower hath the one-half of it sometimes of a pale whitish colour, and the other half of a paler damaske colour than the ordinary; this happeneth so many times, and sometimes also the flower hath divers stripes and markes in it, as one leaf white or striped with white, and the other half blush or striped with blush; sometimes, also, all striped or spotted over, and other times little or no stripes or marks at all, as nature listeth to play with varieties in this as in other flowers." The same author states that the damask Rose "is of the most excellent, sweet, pleasant scent, far surpassing all other Roses or flowers, being neither heady nor too strong, nor stuffing or unpleasant sweet, as many other flowers." The shoot and leaves figured in Parkinson's book show this to be a variety of Rosa damascena of Miller, and as its flowers agree with the description, there can be no doubt that it is the true York and Lancaster Rose, a name now generally applied to the Gloria Mundi Rose, which is a variety of Rosa gallica, or French Rose.—W. Gorrie.

Two desirable Outdoor Plants.—Now that the majority of people are beginning to think what flower seeds, &c., they are going to buy for the ensuing season, may I be allowed to suggest two flowers, which will, I think, please anybody who tries them. The first is Bidens atrosanguinea, a flower I have never seen anywhere but in my father's garden. We raise the seeds in a warm frame, and plant out the young plants at the same time as we do Asters. The flowers are of a very rich maroon or chocolate colour, and resemble somewhat a single Dahlia. Mixed in a bouquet they form a charming contrast to any white or yellow flowers. After flowering we take up the roots, which are very like those of a Dahlia, and treat them just the same as we do those of that flower. They like a good rich soil. The other flower I would suggest is the beautiful and fragrant white Evening Primrose (Œnothera marginata). We got this in the form of a plant from Messrs. Backhouse last year, and were quite charmed with it. It is, I think, quite as good a white as the Eucharis amazonica, though of course not as strong in texture. It has done remarkably well with us, planted on a mound of rich soil, with plenty of room to ramble about. The latter it must have, as its spreading propensity is extraordinary. Any lover of flowers will appreciate the beauty of this Œnothera when he finds it just opening on a still warm evening in summer.—J. H. Donald.

Myosotis dissitiflora.—I have never known this beautiful plant so early as this year. On the 20th inst. it was bursting into flower all across patches 6 inches in diameter. The opening blossoms were also all blue—an unusual circumstance with the first blooms. Two frosts—one of 3° and the other of 9°—have occurred since then. These have changed the flowers from blue to pink. I observe that "A.," at page 30, writes that this plant should be propagated from seed only, and that no reliance should be placed on old stools. I agree with the latter half of the sentence. Old stools only form a sort of couch for the rain and the dew to nestle upon, to the partial or complete destruction of the crown of the plant, perhaps the whole of it. But there is no logical nor necessary connection between the abolition of old stools and the raising of plants from seed only. Every leg of the stool, that is, each shoot or branch, will make an independent plant, equal in health, size, and beauty to the best and healthiest of seedlings. Take, for instance, each shoot, either with or without roots, and plant it either in a cold frame or shady border up to the leaves, and it becomes a plant in a very short time. If short of plants, repeat the sub-division again and again up to the middle of August, and thus multiply it to any extent. I have no objection to seedlings if you can be sure of getting the stock pure; but as one of the largest growers of this lovely gem, I must affirm that cuttings and divisions are equally certain, successful, and often a more rapid means of increase; and, moreover, that plants so raised flower as freely and grow as well as plants raised from seed.—D. T. Fish.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Thymus Serpyllum.—I have a variegated variety of this Thyme much in the way of Fisher and Holmes' beautiful Thyme, only, of course, much smaller in all its parts. The colour is very similar. I have also a golden self-coloured variety of T. Serpyllum; both will make fine rockery plants. From their close growth and hanging habit, they are well calculated to run over the dry surfaces of anything used in rockeries or dry banks.—W. Elliott, *Beechmont*.

Wallflowers.—The dark crimson Wallflowers of the metropolitan market gardens are now coming rapidly into flower, and bunches of them have been cut and sent to market occasionally during the last few weeks. This strain of Wallflower is the earliest of any. Seed sown of it in March and April produces plants so dwarf, branching, and even in growth that an acre of them looks as though the tops had been cut level with shears. This Wallflower furnishes rich masses of colour in spring, and should, therefore, be in every garden.—A. D.

A NATURAL CONSERVATORY.

Over vast regions, in every latitude, the vegetation is so sparse or so monotonous that scenes deserving of the above name are rare, yet when the country is fertile in plants, and varied in surface, we sometimes find them in abundance. In the Alps, for example, scenes of beauty unmatched in gardens are often met with, not only where the Alpine flowers are the only vegetation, but also in the woods and copses. In California, too, the mixture of gigantic Pines with glossy Evergreens, both set in a sea of Lilies and other bulbs, and brilliant annuals, causes much of the hill country to be what might be called a magnificent conservatory. Intense heat or drought are of course as likely to lead to barrenness as great cold, and in the tropics, as in colder lands, the country is often dreary so far as vegetation is concerned; it depends therefore entirely on the vegetation whether a country be dreary or the reverse. In moist parts, however, the beauty of the vegetation is often of a kind of which those who know cold countries only can form no idea, and conservatories of beautiful plant-life are common enough. Our illustration shows a scene in which the vegetation, doubtless from the abundance of water, is luxuriant, and the grouping of diverse types particularly happy. As the flowers of the numerous climbing plants and other humbler types of vegetation cannot be rendered at such a distance, the little picture depends for its charms on the outline of the larger subjects alone, and it shews forcibly the value of form in a picture of this kind. It affords, indeed, quite a lesson as to the effects to be obtained by a little bold variation in the way of form. Take away the Palms, large Arad, &c., and leave only the smaller-leaved tropical types, and the scene, though picturesque, becomes little different in aspect from one common in every northern country.

A Natural Conservatory.

Neilgherry Cinchona.—The question of growing Cinchona at a profit in various parts of India appears to have reached a very promising stage, in spite of the drawbacks incidental to most experiments of the kind. Mr. M'Ivor, superintendent of the state plantations in Southern India, lately informed his Government that large harvests of the bark might now be reckoned upon, and advised the sending home of not less than 25,000 lbs. as a first consignment, to be sold by public auction, with a view to test its quality and market value. It is still open, we believe, to question how often the same trees can be stripped of their bark without injuring the quality of the yield, and many predict some kind of deterioration in the trees themselves. Canker also has for some time been at work in several plantations on the Neilgherry and Sikkim Hills; but its ravages seem to be confined mainly to plantations grown on unkindly soil or in climates more or less unsuitable. The *Darjeeling News*, however, speaks with perfect confidence of the results already attained in the Sikkim Hills. It declares that the bark grown there "could be sold with a fair profit at prices which would be ruinous to the producers in any other country where it is cultivated." In South America, where the mere cultivation of the plant costs nothing, the cost of carriage to the sea-coast tends to check the export trade whenever a fall in the market price occurs. In India the extent to which Government once carried experiments in growing Cinchona is said to have frightened a good deal of private enterprise out of the field; but the few speculators who hold on in spite of every hindrance may now expect to "enjoy a golden harvest," after some ten years of anxious waiting. While the private gardens on the Neilgherries show little chance as yet of winning back the sums laid out on them for years past, it is reckoned that the Darjeeling planters will soon be reaping a dividend of 30 per cent. As no return, however, can be expected from a Cinchona garden for the first eight years or so of its existence, none but capitalists are likely to embark in a venture which demands a good deal of ready money combined with a very large stock of human patience as well as cultural knowledge.

PUBLIC GARDENS.

CO-OPERATIVE PARKS.

WE find the following interesting article on a very important subject in the American *Gardeners' Monthly* :—"In connection with recent experience in Europe and America, we expressed our opinion a few months ago that neither at private hands nor from public bodies did we expect more than exceptional specimens of high art in landscape gardening. The American man—the average man—will regard his pleasures as well as his business, from a monetary point of view. And the American people, adopting the vicious principle that politics is a battle for power, and that 'to the victor belongs the spoils,' must have 'rotation in office': and landscape gardening, being essentially a thing of years, and not of days, cannot exist to any great extent under these accidental or quadrennial terms. But there are thousands of persons in our community who perceive these things as clearly as we do, and who delight in high art in gardening none the less for our social difficulties in the prosecution of the taste. All our public librarians tell us that the number of landless dwellers in cities and large towns who take out works on gardening and landscape art is truly astonishing; and the publishers of horticultural magazines can tell a similar strange story as to the large list of people who, without either garden or farm, are yet to be counted among the most zealous of their subscribers. These people would be the most enthusiastic in behalf of our beautiful art, if they could practise the taste without endangering their real estate speculations, or spending more money on it than their means will permit. For this large class, the plan of co-operative parks and gardens affords golden opportunities; and we presume nothing has prevented extensive application of the principle but the lack of monied men of sufficient perception to understand this innate love of citizens for garden art; or, if perceived with sufficient judgement, to employ the person to design and oversee the work.

"Philadelphia has been fortunate, of late years, in having, on the management of her three leading railroad lines—the Pennsylvania, the Reading, and the Philadelphia, Wilmington, and Baltimore—men of high scientific and refined artistic tastes, conjoined with eminent business capacity. These men understand, it seems, how much can be done in landscape gardening for this large and increasing class in the community; and are laying out, in various directions about the city, beautiful tracts in the highest style of art, and selling the lots in connection with these beauty spots in such a discriminating way that even the man with an income of but a thousand dollars a year, may have not only a home in the country, but such a home surrounded by the treasures of nature and art, which, but a very few years ago, it would have been presumptuous for any one but a millionaire to aspire to. Among the movers in these enterprises, the Philadelphia, Wilmington and Baltimore Company is occupying a front rank. The original idea of a railroad was to connect two separate communities, and this line especially acted so strictly under this construction, that the road led through the cheapest ground, without regard to any other consideration. Beautiful sites were, of course, ignored; and the road was run through a level, marshy tract, which, if it were not for an occasional glimpse of the beautiful Delaware, might serve to discipline any one who rode over it, as thoroughly as a hair shirt would have done an ancient anchorite. To remedy this the present board have changed the whole track, taking it through the high ridge which runs parallel with the Delaware a mile or two from its banks from Philadelphia to Chester; and laid off, at convenient distances, park towns along its line. The road being just finished, an opening trip was recently afforded to the editors of the leading Philadelphia papers, and a stoppage of some time at the chief park, Ridley, gave us an opportunity of noting some of its leading features. The plot occupies six hundred acres, and is diversified by a continuous succession of hill and dale, through which numerous creeks and water-courses meandered to the Delaware, which was, at this point, about three miles away, and at this time bore on its bosom numerous vessels, bound for the city, six miles above. The company has been extremely fortunate in securing the services of Mr. Robert Morris Copeland as landscape gardener and chief engineer; who, as the author of 'Country Homes,' is well known and esteemed by most of our readers. Mr. Copeland has taken advantage of these valley streams to make large and beautiful lakes at points where their margins form outlines of great beauty, without any other labour than throwing a dam across the foot of the projected lake. These dams are arranged as waterfalls—not as we often see mere mockeries of natural ones—but waterfalls as natural and beautiful as any wild nature can boast of. These lakes and falls are to serve other purposes besides boating, fishing, and attractive beauty. They will be the water reservoirs of the projected town. It is but one year since the undertaking was commenced, and the chief work has, of course, been road making. These roads are some of them straight, some curved, just as the peculiarities of the surface or landscape effect required. In various parts of the tract small portions of from one to several acres are set apart for the public parks or gardens; and these, with the roads, belong to the whole people of the settlement, in common. In order to maintain these public portions in the highest conditions of landscape gardening art, one-fifth of all the purchase money is set apart as a fund to be held in trust by the railroad company perpetually, the interest of which is to be used for the purpose. The lots are of all sizes and prices, from 200 to 2,000 dollars, while the railroad company conveys to and fro passengers and material for a considerable period to all who build. It is easy to see how such projects as these must succeed. They are born of the necessities of the times. To all intelligent people it is no mere poetic fiction that God made the country and man made the town. The only wonder is that it has not been reduced to practical prose long before this.

"The company prepared an elegant entertainment for its guests, at the conclusion of which the party returned to Philadelphia, all, we believe, well satisfied that the idea of co-operative parks was destined to solve the great problem of how the American people may live near to business and yet in the midst of the highest efforts of garden art, without being borne down by the weight of private expences or public taxation."

THE KITCHEN GARDEN.

THE SEASON—SHELTER.

THE sudden fall of snow which we have had is another proof of the fickleness of our climate, and of the necessity of watchfulness. The advantages of a sheltered over an exposed situation for early vegetable crops is much felt in cold, windy weather; even the shelter of a straw-thatched or furze-drawn hurdle, to break the force of the wind, is of greater advantage than the inexperienced would give it credit for. Let us imagine you have at the corner of a house or in some other exposed situation, a bed of Roses or some choice evergreens which are always cut by the winds. Place to the windward of them a hurdle, or a few stakes, drawn with evergreens, through which the wind must be sifted before it gets to the plants, and the chances are you will have no further cause for complaint. The success which attends the labours of the great market gardeners, through covering their early Radishes, Potatoes, Rhubarb, and other crops with a light shelter of straw every evening is well known. Some, indeed, use that kind of covering by the acre. I am acquainted with one cultivator who grows from thirty to forty acres of early Potatoes annually, all of which, after they are through the ground, are protected nightly by a scattering of straw. This is taken off in the morning and returned at night, and if the day is exceptionally cold, it is left on all day. The philosophy of this is that the heat accumulated by means of the sun's rays during the day is intercepted in its radiation by the covering at night. The experiments of Dr. Wells have shown us that a cambric handkerchief suspended a few inches high by the four corners over a plot of ground will make a difference of four or five degrees of temperature compared with another thermometer not protected, and hence we have the key to the protective influence of the covering of straw. Great Rhubarb growers will now be using straw by the ton, and, dear as it is, they will find their profit in its use. Still the question is worth asking, would not scrim or some other of the many protecting fabrics which are now offered to the public be as good and cheap as straw, while it would certainly be much neater? A piece of 20 yards might be bought for five shillings—I have had it much cheaper—and this, with proper care, would protect a row or two of early Peas for several years. Apply the same principle to our bush fruit trees and the result would be a crop in seasons when crops fail. Twelve months ago I ran up a temporary glazed shed for the spring protection of bedding and other plants, and not wishing to go to the expense of side walls, had recourse to strong Britannia netting, which was put up at night and taken down again in the day as seemed necessary. After this was used we had on several occasions from 6° to 10° of frost, and yet not a plant sustained the slightest injury. For the summer growth of greenhouse plants, this shed proved the best place

I ever had, for the netting gave sufficient shade to the plants without intercepting the free circulation of air, and the consequence was the plants standing upon the cool ground grew with a luxuriance which I have never seen surpassed and rarely equalled. So convinced am I of the advantages of the plan, that in future I shall arrange my plant houses so that the side lights can be taken away and the netting substituted for the summer and autumn months. For orchard houses I believe this system would be perfection, as it would admit a free circulation of air at all times without a cold draught. In using netting for the fronts of plant houses, there is the advantage that if the atmosphere is very dry and parching, you can, by drawing a syringeful or two of water over the netting several times during the day, produce an atmosphere as moist as you please, or as, at any rate, may be needful. This is an immense advantage, and may be secured without any expensive and complicated schemes of ventilation. The means at hand for sheltering crops are numerous, and will readily suggest themselves to thoughtful minds, and with keen parching north-easters upon us, shelter is the thing that we must look to for some weeks to come. P.

SEED SOWING.

There are few subjects upon which more nonsense has been written than about the depth at which seed should be sown. In a work recently published for the special guidance of cottagers they are told to cover the seeds about their own thickness with soil, which would mean that Peas and Beans should be covered one quarter of an inch, and such things as Celery, Onion, or Lettuce, about the thirty-second part of that measure—depths so ridiculously shallow as to show the absurdity of the directions. Soils differ. We have them of all textures, from drifting sand to heavy clay; and to lay down a general rule applicable to all would be impossible. It needs little penetration to perceive that even the smallest seeds may be sown much deeper in light soil than in those of heavy texture. Small seeds, for example, may be covered half an inch deep with light soil, and yet get through; while if covered the same depth with heavy loam the chances are that the seed would perish, more especially should the weather at the time be cold and damp. Good seed secured, the next point, and the greatest element of success, is to have the ground properly prepared to receive it. That can only be accomplished by timely and proper cultivation, or rather preparation of the soil, during the winter season. Light land, so far as its mechanical preparation is concerned, may very readily be brought into condition; but heavy land can only be approached through the agencies of heat and frost. The first dries the clod so thoroughly that when the rain comes and moistens it it falls to pieces like lumps of lime. Frost, on the contrary, rends the clod into innumerable parts, and, after a thaw, that which was stubborn brick earth is reduced to a powder. To keep it so is the next point, and that can only be effected by mixing it with a sandy or other substance, which in future will prevent the adhesion of the parts. This, with proper drainage, will bring the stubborn clays into culturable condition, and so managed they become the most fertile soils in the country. Some years back I had occasion to remodel an old garden, which for thirty years previously had been under the plough. The fruit trees had grown out of all character, some which were dwarfs at the time of planting being bush trees 20 feet high, and nearly double that in diameter. To deal with such a garden required a radical change, and therefore, as the ground had never been drained, that was the first process, to the depth of 4 feet. Then followed a staff of trenchers, who moved the ground to the depth of 3 feet, not necessarily reversing the position of the soil, but throwing the weedy surface soil to the bottom, and bringing a fair portion of strong clay to the surface. This was left in rough lumps, in expectation that the frost would disintegrate it; but, as frost did not come, we had to leave that piece of cultivation to the March winds. These did their work very effectually, so that by the end of the month, after a few hours' rain, the lumps fell to pieces, and, with a careful forking, we were able to bring the soil into fair workable condition. One afternoon in the early part of April the ground was prepared for Onions, rolled two or three times over with a garden roller, and then drills were drawn preparatory to sowing the following morning. During the night rain came on, so that the next day the soil was in a rather plastic condition; but, as the seed was sown, we had to cover it—a difficult matter. Not, however, to be beaten, we repaired to the rubbish fire, and there procuring some charred earth, mixed it with fresh loam, and, after sifting the two together, covered the seed drills by hand. A few days afterwards, the surface being dry, it was raked over, and then by rolling it with a light wooden roller the work was finished. Onion sowing about the middle of April was of course regarded as a waste of time. The labourers quietly confided to each other the fact that Onions could not be grown in that manner in that locality; and when, as the young plants were peeping through the ground, I gave a fair snow-storm of salt, the crop was pronounced as "finished." Time wore on; the thin green lines gained strength, so that by September a finer crop was never seen, many bulbs being from 12 ozs. to 20 ozs. each, and as firm as need be. Now, in this case the covering of the seed was certainly little less than an inch thick, and if the ground is in proper condition, the soil fine, and the weather favourable, small seeds may be covered that depth; but if it is heavy or plastic, to cover so deeply is almost certain destruction of the seed. In such cases it is always best to cover with fresh soil; and if to it some charred earth, or earth and refuse, can be added, there is a fair chance of benefit arising. For that reason the heavy-land garden should always have a rubbish pile burning, and a fair proportion of the soil ready for use, as it is impossible to have too much of it. Seeds, it should be recollected, cannot vegetate unless the soil be kept in a state of moisture. With shallow sowing the seed is exposed to every change of the weather; to-day it is dry, for a week it may be moist; then we have a few dry, hot days, the sprouting seeds are scorched up, and the seedsman is blamed for supplying a bad article, when in reality the amateur and his teachers ought to be arraigned for their ignorance. With larger seeds, the ground being properly prepared, I always, especially for summer crops, prefer to draw the trenches 4 or 6 inches deep, sowing in the bottom, covering 2 to 3 inches deep, and then earthing the Peas or Beans as they advance in growth with the remaining soil.

Radishes and Lettuces, especially for the summer crop, I generally fork in about 2 inches deep with a five-pronged fork. There are two advantages in this; it cheats the birds, and at the same time gives the seed a chance of vegetating strongly. For complete success, especially for the cultivation of leguminous crops through the hot weather, there is no plan so good as to take out trenches, say 18 inches deep and as much wide, placing 6 inches of good rotten dung in the bottom, and nearly as much soil, upon which the Peas or Beans may be sown. Crops so sown get a root-hold of the soil which is impossible under the surface system of cultivation, and it is not too much to say that one row of Peas or runner Beans so grown, with ample room for the sun to act on both sides, will yield more produce than three rows of the same length grown on the ordinary plan. Crops so grown should have plenty of room—indeed Peas, according to their height, should have from 8 to 12 or 15 feet between the rows—and then the produce will not only be greater in quantity, but of very superior quality, while the space between the rows will be suitable for dwarf-growing crops. Crowding is one of the sins of the small gardener; because he is pinched for space, he must crowd his plants, forgetting that every living thing must have room to grow, and if it has not, attenuation must be the consequence. Of this there can be no doubt, and yet so covetous are many, that a man with a few score plants more than he has room for would rather spoil the lot than give or throw them away. With good seed thick seeding is waste, and the neglect of timely thinning must result in the injury of the crop. Where there is time, as is generally the case with amateurs, it is a capital practice to drop the seed of Onions, Carrots, and the like at those distances apart which they require for full growth. Three or four seeds in each patch will be quite sufficient, and, as the distance admits of thorough cultivation around the plants, superior growth is the consequence. This is something like dibbling the corn crops, a pint or two of seed upon properly prepared ground producing as great a return as when two or more bushels are sown. With scarce or expensive seeds dibbling is a decided advantage. D. T.

MATERIALS FOR BOTTOM HEAT.

The use of fermenting material for growing the more tender kinds of plants is a practice old as the art of gardening itself, and the expedients resorted to to get a little "bottom heat" are numerous, and some of them very skilful. The most primitive is that of taking advantage of solar heat, and digging it in. Thus in the open garden, if we mark out a plot of ground, and daily, just as the sun is leaving it, dig it over and make the surface fine, we shall in the course of a week or ten days, according to the power of the sun, raise the temperature of the soil 5° to 10°; the meaning of the action being that we dig the heat absorbed by the surface soil in, instead of allowing it to be radiated into space, as it would be if left exposed upon the surface. Thus the daily digging of a piece of ground is of much greater importance than the early planting of the crop, inasmuch as in one case you secure the bottom heat before planting, while in the other you have to wait for the warm rains of spring to carry the life-invigorating heat to the roots of the plants. Practically considered, you may warm the ground before sowing or planting by this simple process, but you must rake the surface fine so as to prevent the heat from escaping between the interstices of the soil, and if you supplement that raking by covering with a mat or carpet from sunset to sunrise, you will prevent radiation and attain your object in a shorter time. The dung bed for Cucumbers and Melons, the ridge of leaves, dung, and vegetable refuse for early vegetables, are among the oldest of gardening expedients for obtaining bottom heat, and there are other things which we may examine *seriatim*. But of all things for bottom heat "sweet" stable manure is the best, because the results of its fermentation and decomposition are beneficial to the life and substance of the plants which you wish to assist. You may by fire either applied to water or to flues command the same amount of heat; you may also saturate the atmosphere with moisture, but you cannot command that combination of plant stimulants which results from the decomposition of fermenting matter, such as stable manure. Hence, many of our best gardeners look to the hot-bed for growing certain plants, and especially for propagating, and I could enumerate many rare and beautiful stove plants that may be grown vigorously upon dung heat which cannot be secured under any other circumstances. Still the labour attending fire heat is much less than that from dung, and hence the reason why fermenting material has been superseded by hot water and the primitive flue. But with all our modern command of fire heat, the skilful cultivator still resorts to fermenting material. If he has pipes or flues he covers them with dung, or leaves or tan, or like our friend Mr. Westland, when at Lord Belper's, he may take "bobbin chips" and get bottom heat from them. Other gardeners also have followed his example with good results. But be it recollected that the chips must be from native timber, Sycamore, Horse Chestnut, Beech, and other soft woods, and that if the chips are made while the wood is yet green the chances of their fermenting when brought into a mass are more certain, but if they are dry they must be moistened, mixed, and packed in a heap until fermentation commences. These chips do not encourage worms or other insects, and are found much more durable than tan or tan and leaves. Be careful, however, to avoid chips made from foreign timber, as the decomposition is slow and the heat irregular. Bobbin chips can, of course, be obtained where "life among the spindles" is a leading occupation, and hence Manchester, Nottingham, and Derby, may be considered the centres of such work, and there chips may be procured at a reasonable price. The London market gardeners use spent Hops from the breweries extensively for bottom heat, for growing various kinds of vegetables and saladings in frames, and some of the market growers of Roses for Covent Garden also use them very extensively in their forcing houses as a substitute for tan. To see at this time of the year from ten to twenty thousands of fancy Roses in one garden growing upon fermenting beds of spent Hops is not an uncommon sight, and I am told, but have no experience in the matter, that Hops, when decomposed, make capital material in which to grow soft-wooded plants. Hence the Hops of large breweries are worth procuring; indeed, market gardeners are so alive to this fact that they furnish themselves with this material according to convenience and the extent of their ground. Not only do they use spent Hops for bottom heat, but to assist in the accumulation of the ordinary manure heap. Spent Hops form an excellent sponge for absorbing liquid manure; they are, therefore, sometimes steeped in it, and afterwards transferred to the land.—W. M.

Connover's Colossal Asparagus.—This fine variety has been sent out by us during these last three years, being originally received from a first class house in America, after testing it with the reputed best kinds, and having proved it to be superior to all others known to them. Its most excellent and superior character has now been proved not only in English gardens, by its annual demand in preference to others, but its superiority abroad has also been proved. We are in receipt of a communication from Dr. Cornish, of Madras, whose success in the cultivation of this variety has so far exceeded the results of his experience with others previously grown by him under similar treatment, that he was requested by the Committee of the Agri-Horticultural Society of Madras to draw up a paper detailing the results of his experience, and it is from this communication we learn that, allowing for the rapidity of growth common to all vegetables in that climate, from the seed of this Asparagus, which was received from us in November, and sown on the 28th of the same month, with the usual treatment, the bed commenced yielding a crop of shoots fit for the table in July, such as would do credit to Covent Garden, a continuous stated cutting being made from the bed whilst in season, thus showing that the bed commenced yielding freely within seven months. Dr. Cornish further states, that "though the upward growth of Asparagus is so rapid in this climate, yet, in comparison with the thin and slender crowns obtained from other kinds, the 'Colossal' variety comes up with a good sturdy head, or crown, and in justice, I may state that this is the finest variety of Asparagus I have yet seen for size, strength, delicacy of flavour, and tenderness."—*E. G. Henderson's Catalogue.*

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Snow's Winter White Broccoli.—I don't know any vegetable at this season so acceptable as this Broccoli, when true. I am this season growing three packets of seeds, obtained from as many different seedsmen. No. 1, sown in March, is now coming in, but the heads are green and frothy. No. 2, sown same time, is about 4 feet high, and worthless. No. 3 is short and stocky, just in now, January 14, and the heads are perfectly protected by their own leaves, white as snow, firm as it is possible for a Broccoli to be, and the stock is true.—R. Gilbert, *Burghley, Stamford.*

Liquorice.—Kindly tell me if it is practicable to grow Liquorice in this country. W. W. [Liquorice is seldom grown in gardens; but it is extensively cultivated in some parts of England, especially in the neighbourhood of Mitcham, in Surrey. A deep, rich sandy loam suits it admirably. Crops preceding the Liquorice should be heavily manured, but not the Liquorice, which, like most other root crops, dislikes fresh manure. If the ground is really poor, it may be applied; but in that case it should be trenched deeply into the soil. Trench the ground to be planted, casting it up into rough ridges in autumn; level these down in the end of February, and plant, in rows 3 inches deep and 3 feet apart, finger-length cuttings of the underground stems of the plants, about 18 inches asunder in the rows. Three years will elapse before the roots or rather creeping stems are ready for use, they should then be taken up and stored like other root crops.]

A little flower so lowly grew,
  So lonely was it left,
That Heaven looked like an eye of blue,
  Down in its rocky cleft.

What could the little flower do
  In such a darksome place,
But try to reach that eye of blue,
  And climb to kiss Heaven's face?

And there's no life so lone and low
  But strength may still be given,
From narrowest lot on earth to grow
  The straighter up to Heaven.

—*Gerald Massey.*

Do Plants throw off Carbonic Acid Gas?—Plants have commonly been thought to differ from animals in the gases which they secrete; the animal parting with carbonic acid, while the plant gave out oxygen. Dr. J. C. Draper, of New York, however, maintains that all living things, whether animal or plant, absorb oxygen and give out carbonic acid; and that the life of the plant is one continuous drinking-in of oxygen gas. Having grown plants similarly nourished in the dark and in sunlight, he found that all the same parts were produced in both cases almost at the same times, and that the slightly slower evolution of the series grown in the dark is marked by a slightly smaller weight, while the same plant measured by night and by day grows slightly faster in darkness than in sunlight. The roots of plants grown under both circumstances throw out the same kind of excrement. Therefore, as the evolution and weight and root-secretion agree, he urges that the carbonic acid has been, in both cases, thrown off as a consequence of growth, and has never been absorbed by the roots, and then given out as vapour from the leaves.

THE ARBORETUM.

THE BANYAN TREE.

Among the many striking features of tropical vegetation none are more interesting than the Fig family, which has from early history been mentioned in connection with religious and secular usages. The produce of the India-rubber tree (Ficus elastica) is too well known to require comment. The great Banyan tree of India (Ficus indica) is so gigantic and determined in its growth as frequently to cover from its starting-point of a solitary plant whole acres of land, beating back and overpowering its less energetic associates. The accompanying sketch shows a group of the Banyan tree which has covered from one patriarchal stem several acres by the simple process of throwing out from the arms of its extended branches roots, which gradually but surely find their way to the earth, and firmly attach themselves to their natural element, forming auxiliary stems, props, and guy lines, to keep the ponderous head of the parent tree in position; without such aids, the heavy load of bright dark green and leathery foliage would inevitably crush to the ground the elder plant. I have never yet met with an uninteresting species of Ficus, from the small Ivy-like F. repens to the fruiting Fig so well known in horticulture and commerce; the Sycamore Fig forms the avenue from Cairo to Shubra (Mehemid Ali's princely garden in Egypt). The India-rubber Fig, too, so well known in its dwarfer state as one of the best additions to our sub-tropical gardens, is familiar to every lounger in Hyde Park and Rotten Row. The sacred tree of Buddha (Ficus religiosa) is found in the vicinity of every Buddhist temple in Ceylon and India, and the big-leaved Figs Neumanniana, Afzelii, nymphææfolia, and others that were introduced into the jungle of the conservatory at Chatsworth under the genius of Paxton, aided by the intelligent and liberal patronage of one of the most unassuming, but noblest of men, viz., the late Duke of Devonshire. All these Figs and a score of others have their special interest. But to the Banyan tree must be given the palm of praise, not only for its gigantic growth, but for its truly noble and picturesque appearance in the landscape, and also for its intense verdure, which neither tropical sun nor droughts appear to disturb. At a distance of several miles it may be readily distinguished from its associates, by the density of its colour and foliage. An almost historical Banyan grew near Colombo, in Ceylon, at Colpetty, giving the names of Banyan House, Banyan Villa, &c., to most of the residences in its neighbourhood. This tree had evidently covered a wide-spread area of land, but as civilization had grown in its vicinity, it had been cut back for the merchant residences and villages that form this West-end portion of Colombo. This patriarch stood on the border of the Government road from Colombo to Point de Galle, was upwards of 30 feet in circumference at its base, and was supported by a few air-root stems upwards of 60 feet in height. It had, no doubt, witnessed the decades of the Portuguese and Dutch Governments in that island, but in the winter of 1867, during a heavy gale of the north-east monsoon, it came down, fortunately doing no greater damage than knocking down the portico of Banyan Tree House, where I was then staying, upsetting about a hundred Cocoa-nut trees in its fall, and blocking up the mail road to Galle for about ten days; although Major Skinner, or one of his assistants, had a good portion of the pioneer division employed in clearing away the *débris.*

Peter Wallace.

A spreading Fig Tree in Ceylon.

THE MOVEMENT OF THE SAP.

The movements of water in plants are quite incorrectly stated in all our English text-books, and for the best information on the subject I would refer you to "Sach's Lehrbuch der Botanik," third edition, page 584, *et seq.* Two distinct currents of water (*i. e.*, sap, or water with certain substances in suspension or solution) occur in plants—a slow and a rapid. The rapid current is exclusively related to the process of *transpiration.* It, therefore, varies with the season and time of day. The other—slow movement—is connected with the transport of assimilated matters (as starch) from one part of the plant to another, as from assimilating organs (chiefly foliage leaves) to reservoirs of nutrient materials, or to the growing points of stems and roots, or wherever cell-multiplication or cell-enlargement is going on. The rapid current takes place in the daytime, during sunlight, and the fluid passes up in *the walls of the wood-cells of the fibro-vascular bundles.* The researches of Naegeli clearly prove this, although all our English books say it is through the cavities of the tubes, *not* in the walls. The rapidity of the current, as calculated by Sachs, was 23 ctms. per hour in Silver Poplar. I observed a rate of from 42 to 46 ctms. per hour. In mentioning my experiments, Sachs says that the amount is probably *too small.* In this I agree, because my experiments were made in the beginning of October. If they had been done in *June*, the results obtained would probably have been *double.* The slow current is quite irregular, and may move in any direction. Wherever assimilated materials are wanted, the fluid will move in that direction, up or down. It depends on osmose chiefly, and is a true movement from cell to cell, not like the rapid movement through the actual substance of the walls. In the Cherry Laurel, the total water present is 63 per cent. Of that I calculate that 6 or 7 per cent. only is water of transpiration, and in rapid movement, while 56 to 57 is in slow movement. No other experiments on this head have been made, and, as it is a matter of great importance, it ought to be fully investigated. W. R. M'Nab.

Royal College of Science, Dublin.

THUJA GIGANTEA AND LIBOCEDRUS DECURRENS.

The tree which is commonly known in Vancouver Island, British Columbia, Washington Territory, and the northern portion of Oregon as "the Cedar," is Thuja gigantea of Nuttall ("Rocky Mountain Plants," p. 52, and Smith's edition of Nuttall's "Sylva," p. 102). The "Pencil Cedar" of the same region is a species of Juniperus allied to, but distinct from, J. virginiana, which I first described under the name of J. Henryana, in honour of one of the first of Scottish amateur horticulturists—Mr. I. Anderson-Henry, of Woodend. In California Thuja gigantea is also called "the Cedar," but to distinguish it from Libocedrus decurrens, Torr., which is sometimes found in company with it, and is called "The Red Cedar," it is known in that State, curiously enough, as "the White Cedar." Parlatore's synonymy is here, as in most cases, quite correct. Libocedrus decurrens, as will at once be seen by any one who will take the trouble to glance at Torrey's excellent figure in his "Plantæ Fremontanæ" ("Smithsonian Contributions to Knowledge," vol. vi., pp. 7, 8, pl. iii.), is entirely different from Thuja gigantea, with which Mr. Gordon has strangely confounded it in his "Pinetum," p. 105, and supplement, p. 102. It is also the Thuja Craigana of the Oregon Committee (or rather, of Professor Balfour, who published in a private brochure a very good figure of the tree). The error of confounding it with T. gigantea I pointed out in one of my published letters to Mr. Anderson-Henry long before Parlatore did, and have since, in various publications in the English and German languages, kept it up. Thuja Menziesii is only a synonym of T. gigantea, being so named by Douglas in ignorance of the prior publication of Nuttall, but afterwards he withdrew the name. T. Lobbii is also the same species, or at best only a very slight variety. Now, as regards their distribution, T. gigantea is very common in Vancouver Island, British Columbia, Washington Territory, and Northern Oregon to the west of the Cascade range of mountains. To the southward it is far from common, and in California is a rare tree; while to the east of the Cascade range it is only occasionally met with (generally in a scrubby form) in the damp dells and river bottoms, but far departed from its pristine glory on the banks of the Lower Columbia or Fraser Rivers. It is not found at any considerable height on the Pacific seaboard; but on the Cascade Mountains, and towards the Rocky Mountains, it rises to a good elevation, being found in Utah at a great altitude on that range. Libocedrus decurrens has, on the other hand, a geographical range from about 44° to at least 33° N.E. and westward to the Sierras and Cascade Mountains. It does not seem to go further east than these mountains. The tree is found at an elevation of from 4,000 to 5,000 feet in the Sierra Nevada in California; but further northwards in Oregon it grows at a much lower elevation, as mentioned in my letter, quoted by your correspondent. I did not find the tree north of Eugene, in Oregon (latitude 44° 2′ 44″ North), and during my journey across the Cascades, a little southward of this point, I found it abundant here and there in the valleys, but very scarce on the eastern side of the mountains. Again, in the Rogue River Valley I saw a few trees, and one or two in Josephine county, near Kerbyville, and southward, in the Siskeyon Mountains, it is quite common. Nowhere, when I saw it, did I see any Thuja gigantea, and, as I have already remarked, T. gigantea is a rare tree where this is common, or, indeed, begins to appear; and further north, in Northern Oregon, Washington Territory, Vancouver Island, and British Columbia, Libocedrus is as unknown as in England. The names of trees given by tourists or travellers in the North-west are as little to be depended on as these usually are in most countries. Indeed, I know no book on the region in question where the names of the trees are correctly given, and in one or two the ignorance displayed is almost miraculous—almost as much so as the ridiculous errors in locality circulated by the labels attached to most Coniferæ grown in Pineta in this country. North-west America is an immense region, possessing all climates. Lower California is almost tropical, while in Upper California there is perpetual snow. The coast climate of British Columbia is mild, that of the interior very cold in winter; the coast climate, however, varies much, according to latitude, &c. Finally, I ought to mention that the name White Cedar is sometimes applied in Oregon to Kellogg's Cupressus fragrans, which is, however, generally known by the names of Ginger Pine, Port Orford Cedar, or by the more indefinite one of Oregon Cedar. Thujopsis borealis, Fischer (Chamæcyparis nutkaensis of Spach, Cupressus nutkæensis of Lambert), is also known on the north-west coast by the name of the Yellow Cedar or Yellow Cypress. It is, however, a much less common tree than any of the others named.

I have given a very full history of these trees in my "Monograph of the Coniferous genus Thuja, Linn., and of the North American species of the genus Libocedrus, Endl." (Trans. Bot. Soc. Edinburgh, vol. ix., part 2). However, in case your correspondent is not able to see it, would you allow me to append to this already too lengthy memorandum the following synonymy of Thuja gigantea and Libocedrus decurrens:—

Thuja gigantea, Nuttall (*l. c*); Gardeners' Monthly Hort. Advertiser (Philadelphia), June, 1859 (good figures); Spach, Hist. Veg. Phan. xi., p. 342 (Encl. Syn. Dougl.); Endl. Syn. Conif., p. 52; Lindl. and Gordon, Journ. Hort. Soc. v., p. 206; Cooper, Nat. Hist. Wash. Terr.. p. 21, and p. 265; Newberry, Trees of Oregon, in P. R. Survey, vi. (Williamson's Report), pp. 56, 57 (fig. 22,—good); Lyall, Journ. Linn. Soc. vii., p. 144; Hook. Fl. Bor. Am. ii., p. 165; Carrière, Traité (*partim*), p. 105, &c.—Thuja Menziesii, Dougl. MS.; Carrière (*partim*), p. 106; Gordon's Pinetum, p. 323.—T. Lobbii, Hort. "T. Craigana et T. gigantea," R. Br. (Campst.), (*fide* Gordon et Carrière) *in literis*, 1863–1865; *postea* "T. gigantea" *olim.* T. Nuttaliana, "Dougl." (*teste* Gordon, Supp., p. 102). ? Abies microphylla, Rafinesque, Atlantic Journal, p. 119.

Natural varieties.—(*a*) var. plicata.—Thuja plicata, Don., Hort. Cantab., ed. 6, p. 249, &c.; Thuja occidentalis plicata, Lond. Encyc., Trees, p. 1110, f. 2108; Thuja Warreana, Borth. Cat., 1837. The T. plicata variegata, var. panachée of M. Carrière, is a sub-variety which has sported in cultivation. (*b*) var. microcarpa, R. Br. (Campst.); Thuja nova species, No. 273, R. Br. (Campst.) in "Farmer," May 16, 1868.

Libocedrus decurrens, Torr. in "Plantæ Fremontanæ" (*l. c.*), Philadelphia Monthly Hort. Advertiser (*l. c.*), figure good; &c.—Thuja Craigana Greg. Comm. (Balf.) in "Description of Coniferæ Collected by Mr. Jeffrey', (private distrib.), plate (good); Lindley in Gard. Chron. 1854, p. 53' Libocedrus Craigana, Hort.; Libocedrus gigantea, Hort.; L. glauca Hort. (Laws.) ? Thuja gigantea, Carr, *l. c.*, p. 105 (*partim*); Gordon, *l. c.*, p. 321, et Supp. 102 (*partim*). Cupressus, No. 750, Jeffrey's MS.

Of the latter there are no natural varieties, so far as I am aware. I have seen two cultivated ones, "T. gigantea divaricata" and "T. gigantea glauca," but they do not require notice.—*R. Brown, in Gardeners' Chronicle.*

[The above interesting letter clears away the confusion that has existed between two of our noblest trees, one of which, T. gigantea, has, we are satisfied, suffered much from not being known by its right name.]

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Large Oriental Plane.—A noble specimen of this Plane—dense, spreading, and well-shaped—is growing in the garden belonging to Emmanuel College, Cambridge. It is 75 yards in circumference, the bole being 11 feet round at the ground, and of about equal thickness to the branches. There is also in this garden a remarkably fine English Elm.—J. J. Chater.

Large Western Plane.—In the Fellows' garden at Sidney College, Cambridge, is a noble specimen of Platanus occidentalis. At 12 feet from the ground the trunk is divided into two huge limbs, and at a foot from the ground the diameter of the bole is 5 feet. In this garden are also two fine Chestnuts, a good specimen of Ailantus, and until recently two spreading specimens of Cornus mascula, which, to make way for alterations, have unfortunately been mutilated. —J. J. Chater.

Large Mistletoe Plants.—The parish of Curland in this county (Somerset) abounds in Mistletoe, and some branches I have had have been so large that it may be worth while to notice them. At Christmas, 1870, I got a bough weighing 26 lbs., full of berries. At Christmas, 1871, I got two, one weighing 10 lbs., without berries, the other 8 lbs., with a great many berries. This last Christmas I again got two specimens, one weighing 8 lbs., the other 7 lbs., both covered with berries. Are not these, especially the first, unusually large? It looked like a tree hung up in my small dining-room.—C.

The Ailantus as a Street Tree.—There is a good reason why the Ailantus should not be planted on the roadside for shade, that is, so exceedingly disagreeable is the odour of the young wood and flowers of this tree, that while it is in blossom the atmosphere for a long distance from the trees is filled with this intensely sickening odour. That it grows rapidly while the tree is young there is no doubt, and this is its only redeeming quality. It thrives in poor soil, and for getting a rapid growth in five or six years on this character of soil, where no one can be annoyed by its odour, the Ailantus will be found to be one of the best trees to plant.—*New York Tribune.*

Names of Cypresses.—Kindly tell me who Mr. Corney and Mr. Gowen were, after whom Cupressus Corneyana, and C. Goveniana were named, and oblige, Alpha. [Cupressus Goveniana was so named by me in the Journal of the Royal Horticultural Society in 1848, in compliment to James Robert Gowen, Esq., the originator of many fine hardy hybrid Rhododendrons and Azaleas, at the Earl of Carnarvon's, at Highclere. Cupressus Corneyana was so named by Mr. Joseph Knight, of the Exotic Nursery, Chelsea, in 1850, after Mr. J. Corney, a China merchant, who brought it and several other plants from China, and disposed of them to Mr. Knight. It is the true weeping Cypress of China. —George Gordon,

CLIMATE AND VEGETATION.

BY ALEXANDER BUCHAN, M.A.

Meteorology is a branch of knowledge which, if not so closely allied in the order of the sciences to botany as is zoology, is yet beyond all question the science that deals with those influences and conditions which most powerfully affect vegetable life. It is thus the science which is practically linked the closest with botany. I therefore propose, on the present occasion, to make some remarks on climate and weather, relative to the geographical distribution of plants; and I am the more induced to do so, having completed certain inquiries regarding prevailing winds and rainfall, which are so intimately connected with this subject. In a singularly lucid paper, read before the Academy of Sciences of Paris in December 1847, Decandolle endeavoured to trace the causes which limit vegetable species towards the north, in Europe, and similar regions. As respects temperature in its relation to this limit of the distribution of plants, the result he arrived at was, that "every species, having its northern limit in central or northern Europe, advances as far as it finds a certain fixed amount of heat, calculated from that day of the year when a certain mean temperature commences to the day when that mean temperature terminates." This law is applied with great ingenuity in explanation of the northern limit of Alyssum calycinum, Euonymus europæus, and Dianthus Carthusianorum; and without doubt, the method of expressing by an arithmetical formula the limits of species may well be regarded as forming an epoch in geographical botany, inasmuch as it points out how this great department of natural science may be placed on a strictly scientific basis. The operation of this law can be best investigated with reference to Wheat, the Vine, the Sugar-cane, the Tea-plant, and other cultivated species; for the obvious reason, that being as far as possible protected by man, they have the limits of their distribution determined almost exclusively by climatic conditions.

Boussingault examined the distribution of Wheat on the continent of Europe, and arrived at the conclusion that it required 8248° F. from the time it begins to grows in spring for the proper ripening of the seed; and, moreover, that this heat must be partitioned so as to secure a mean summer temperature of 58° during the development and maturing of the seed. This minimum amount of heat required for the maturing of their seeds is a vital consideration. We have proved in Scotland that a mean temperature of 56° during this critical period, with the average sunshine and rainfall of the Scottish summer, is sufficient to ripen Wheat properly. Not only so, but it was found that the Wheat crop of 1864 ripened well with only an average temperature of 54·4°. In that year, however, the sunshine was much above the average, and the mean of the daily maximum temperature was high—being as high as in August 1861, when the mean temperature was 57·4°. It is probable that the longer time the sun is above the horizon in Scotland, as compared with Germany and France, renders the ripening of this cereal possible with a lower mean temperature; and when this is combined with a clear dry atmosphere, and consequently a blazing scorching sunshine, grain of excellent quality is ripened, though this mean temperature rise no higher than 54·4°. From this it is clear, that in regarding the influence of temperature on the bringing of plants to maturity, it is not mean temperature merely, but the way in which this vital element is distributed through the day and the night, particularly at the critical periods of the plant's growth, which must be considered. A high mean temperature, with little variation, implies a comparatively low day temperature; and, on the other hand, a moderately low mean temperature, with a large daily range, implies a high day temperature; so that a climate with a comparatively low mean temperature may yet afford the warmth required in carrying on the higher functions of the plant, which another climate of a higher mean temperature could not supply.

Now, that which in the highest degree determines the mode in which temperature is partitioned throughout the twenty-four hours of the day is the amount of cloud and the degree of moisture in the atmosphere, to a knowledge of which we must look to the rainfall through the months of the year as furnishing the best available key. The rainfall affects plants directly through the nourishment it conveys to them, and indirectly through the state of the sky, which its amount or absence implies. Indeed, so great is the influence of the rainfall on vegetation, that we cannot be far wrong in supposing it to be co-ordinate with that of temperature. Whatever the law may be which expresses the atmospheric conditions that determine the limits of the growth of species, it must include in its function both the heat and the moisture of the air. Decandolle deduced the law from the distribution of species over a region whose climates are marked off from each other rather by variations of temperature than of moisture. He then endeavoured to extend it so as to account for the distribution of the Floræ of other regions, the climates of which may be characterised either as moist at all seasons, or subject to marked variations of moisture at stated seasons. Perhaps not the least valuable of the results arrived at by him is the negative one stated in these words:—"On the borders of the Mediterranean Sea, the limits appeared so often determined by the humidity, or by causes still unknown, that the operations of temperature always escaped my calculations."

It may be predicted that when the limits of species have been drawn with some exactness for Central and Northern Europe, the region from which Decandolle took his examples, they will be found to coincide with no mere temperature lines, however calculated and determined; inasmuch as there are much greater differences in the climates of this region than are generally supposed, as regards the rainfall, particularly in the manner of its distribution over the year. Thus, to take one point only, the time of the annual maximum rainfall occurs over a large portion of France and neighbouring regions in May; in the south of Austria, south of Prussia, and south of Russia, in June; in Germany and centre of Russia, in July; and in the north of Russia, in Sweden, Denmark, Holland, and Belgium, in August—differences which cannot fail to have an important bearing on many vegetable functions, and consequently on the area of distribution of many species over these regions. As regards perennial species, especially trees and shrubs, the limit of their distribution is in many cases determined by the absolutely lowest temperatures that occur. In connection with this point, the great frost of Christmas 1860 gave very striking illustration. These minimum temperatures are no doubt in a great measure due to the latitude, but they are more particularly brought about by the state of the sky, and they occur in greatest intensity in certain situations. If the climate be characterised by a dry calm atmosphere and clear skies, the loss of heat by terrestrial radiation during the nights in winter is rapid and great, and the temperature of the air falls correspondingly low. Owing to the greater density, and consequently greater weight of the layer of colder air in contact with the ground, currents of air set in down the slopes of the country whose surface is being cooled, much in the same way as water, and settles in the low-lying situations. And it is well known that it is just in such situations where the destructive effects of frost are greatest on trees and shrubs.

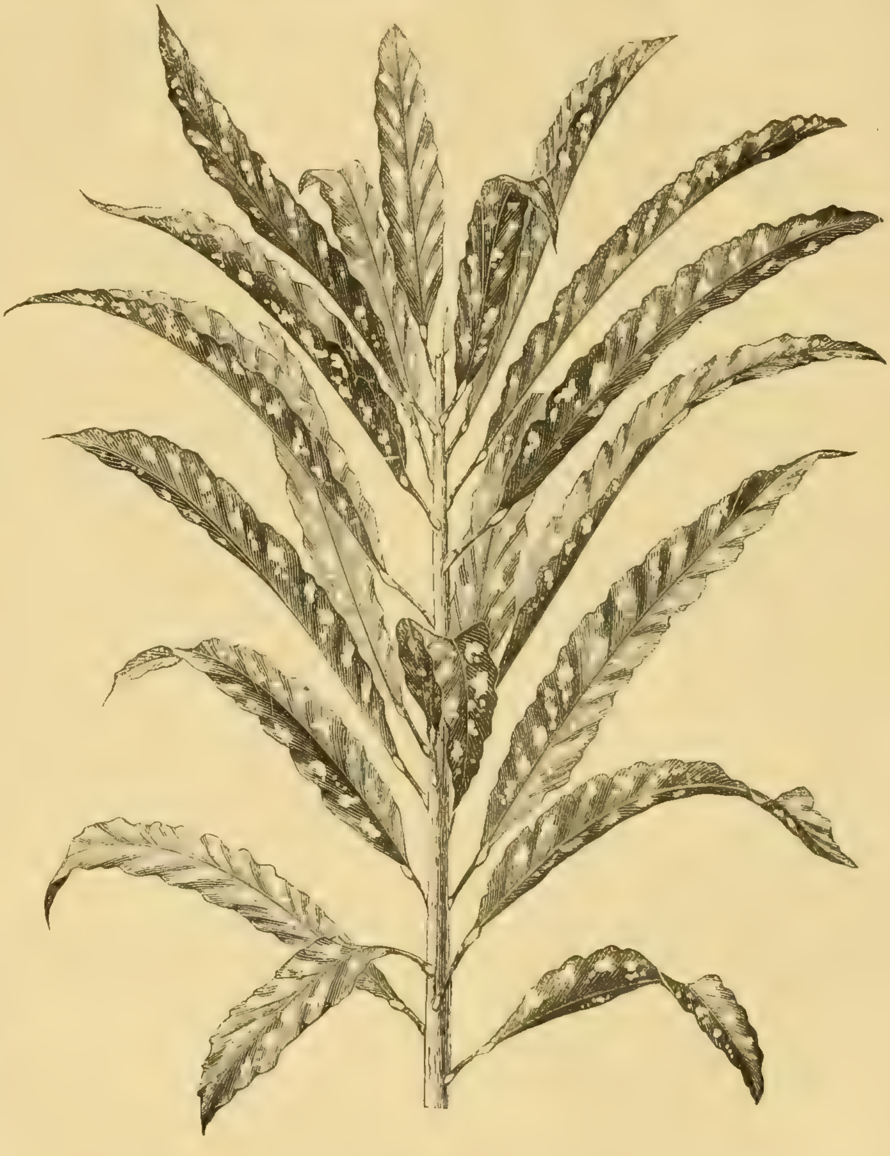
The influence of temperature on the distribution of plants is twofold:—1. A temperature ranging between certain limits is required for the proper development of each species, especially for the maturing of its seed; if the mean temperature falls below this, a condition vital to the propagation of the species is wanting, and if it rises above it an injurious influence is brought to bear on the well-being of the plant. 2. If the temperature falls below a certain point, which point probably differs with each species, the plant is killed, either by the freezing of its juices, and the consequent rupture of its tissues, or in some other way not yet understood. Occasional high temperatures are less injurious, because they only temporarily affect the welfare, instead of proving destructive to the life of the individual. The relation of moisture to plants is analogous to that of temperature. A certain amount is required, whether supplied in the form of rain or dew, or abstracted from the invisible vapours of the air by the plant itself, between the limits of which the plant will live and thrive. If the supply falls below the limit, or rises above it, the vital functions are interfered with, and so far as the species is concerned, the conditions of its existence are there wanting. Now, what we wish to direct special attention to is this: Of these two conditions—heat and moisture—we have presented to us in the distribution of rain a body of facts which leads, where intelligently interpreted, to a knowledge of the laws which determine the distribution of plants more quickly and certainly than in the facts of the distribution of temperature. It is not merely the knowledge respecting the daily and annual fluctuations of the temperature of a country which may be inferred from its rainfall; it is not merely the more important consequences which immediately reult to the plants from a change in the humidity of the climate, than from a corresponding change in its temperature; but what particularly concerns the distribution of plants is this vital distinction between temperature and rainfall, as regards their geographical distribution, viz., climates merge into each other, as respects temperature, by comparatively nice gradations; whereas the most diverse climates, as regards moisture or dryness, are frequently quite contiguous to each other, being placed, as it were, sharply side by side.

It is to the prevailing winds we must look for an explanation of the rainfall, and the broad principles of the connection are these:—1. When the prevailing wind has previously traversed a large extent of ocean, the rainfall is moderately large. 2. If the winds are at the same time advancing into colder regions, the rainfall is largely increased; and if a range of mountains lie across their onward path, the rainfall is also thereby largely increased on the side facing the prevailing winds, and reduced over the regions lying on the other side. 3. If the winds, though arriving from the ocean, have traversed a considerable extent of it, the rainfall is not large. 4. If the winds, even though having traversed a considerable part of the ocean, yet on arriving at the land proceed into lower latitudes, or regions markedly warmer, the rainfall is small or nil.

(To be continued.)

THE GARDEN IN THE HOUSE.

CROTON UNDULATUM.



Croton undulatum.

Of the many species of Croton under cultivation this may be safely regarded as one of the best. It is a native of the South Sea Islands, whence it was introduced by the late Mr. J. Gould Veitch. The petioles of the leaves are an inch or an inch and a half in length, thickened and green at both extremities, and purplish in the centre; the leaf blade is from 7 to 9 inches long, and 2 inches wide, oblong-acuminate, tapering at both ends, and the margins are beautifully undulated or waved. Mature leaves have a dark metallic green ground, beautifully spotted with irregular blotches of crimson, which are visible on the under side, but much paler than on the upper surface. The midrib and veins on the upper side are of a purple colour, and green on the under side. Young leaves are green, blotched with yellow, but, as maturity approaches, the green becomes darker, and the yellow changes to crimson. The plant itself is compact yet graceful in habit, and forms a pretty ornament for a dinner table. Mr. Ward, gardener to F. G. Wilkins, Esq., Leyton, got a plant of this Croton last winter, nicely rooted in a small pot from which he shifted it on into larger ones as required. He kept it near the glass in a moist stove, and gave it a little bottom heat. The compost used for it was two parts loam and one of peat with an ordinary admixture of silver-sand. This plant is now eighteen months old from the cutting, and has made during the past summer five shoots, four of which measure individually nearly 4 feet in length. Indeed, since last year its growth more resembles that of a vigorous growing, broad-leaved Willow than that of one of our most interesting ornamental tropical plants. The foliage is marvellously rich and brilliant, and the young wood well ripened. Before the end of another twelve months, therefore, this plant will be ready to take its place amongst a collection of large specimens of fine foliaged stove plants at our exhibitions. When used for the decoration of the dinner table, it is not advisable to encourage bushy growth. W. F.

SIZES OF VASES FOR TABLE DECORATION.

I should feel extremely obliged to "W. T. P." if he would give his opinion upon the following questions relating to table decorations. Supposing three epergnes, with trumpets, are used for a table 12 feet by 6 feet, what height should they be? Should the centre one be the highest, and, if so, how much higher than the two end ones? Should there be other stands of flowers in or about the centre, and if so, how high? Also, how high should the small glasses be around the sides of the vase, and how many of them would be required for a table the size I have named? and what is the best shape for the purpose?

T. W.

[I have much pleasure in replying to the enquiries of "T. W.," who, I have ascertained, when using the word "epergne," means what is commonly known as a "March stand," that is, a straight stem of glass standing in a flat dish and supporting another flat dish on its top. This March stand, with a trumpet-shaped vase in the top dish, is the form of receptacle for flowers, of which "T. W." proposes to place three upon a dinner-table 12 feet long by 6 feet wide. The central one should be of the following proportions:—Lower dish 12 inches diameter and 2 inches deep; upper dish 6 to 9 inches diameter, and 2 inches deep; length of stem not less than 22 inches; height of trumpet-vase 10 inches or more. The two other stands should be alike, but the proportions should be as follows:—Dishes, same as for the central stand, or rather smaller; length of stem not more than 8 inches; height of trumpet-vase not less than 14 inches, and very slender. If "T. W." will get stands made of these dimensions, he will find that flowers will look well in them, and, when arranged, will not intercept the view across the table. The centre of each end-stand should be placed 2 feet 9 inches from the centre of the middle stand. If the lower dishes of these three stands are fringed with long handsome Fern fronds, it would not be advisable to put on the table any other stands or vases of flowers, excepting a coat-flower in front of every gentleman and a dress bouquet in front of every lady; and these should be in small trumpet-vases from 4 to 6 inches high; but if the lower dishes are sparingly decorated, there will be room for four vases, to be placed about 21 inches from the centre of the table, and about the same distance from the sides. These four may be of any form, provided that they are not more than 9 inches high. The shape that I should generally use for such a purpose would be a trumpet-vase, either standing on a small foot or standing in a dish about 6 or 7 inches diameter; but much would depend upon the character of the flowers which I had to put in them.—W. T. P.]

THE ROMAN MARSH LANDS.

I am quite convinced that malaria arises from stagnant waters, either on the surface of the soil or at little depth. I also grant that the presence of decomposing vegetable matter is necessary to develope it. I also believe that when a sheet of water is of sufficient depth it is no longer noxious. A commission, of which I am a member, is now studying the plans for draining the marshes of Ostia and of Maccarese, at the mouth of the Tiber. It is proposed to exhaust them by steam-power, which we consider the cheapest and quickest process possible. Of course, a like result for purifying the air might be obtained by deepening the waters to a minimum of one metre (40 inches). I say one metre, because in our climate less would be insufficient, and even with that aquatic plants of rapid growth would require constant clipping. When I add, that at present the greatest depth in the marshes of Ostia is only 31 inches, and the surface to be drained is over 5,000 acres, while for Maccarese only a few hectares are more than one metre deep on a surface of 10,000 acres, it is obvious that the expense of deepening would be enormous, even admitting that the dredgings from one spot should be conveyed to fill up another. It had also been proposed to "warp" the lower parts with the deposits of loam from the Tiber, and thus attain a sufficient slope for the waters to run off. But, apart from the difficulty of bringing turbid waters to the marshes, with the limited fall of the Tiber between Rome and the sea, it has been calculated that the time necessary would be over 50 years, and thus only future generations could be benefited. Then, it had been suggested to raise the surface soil by bringing down earth from the neighbouring hills. That would be practicable, and require only a limited time, but the conveyance of 30 millions of cubic metres of earth over a mean distance of 2½ miles would cost £1,800,000 sterling for the improvement of only a portion of the Agro Romano. It is therefore determined to surround the marshes by a circuit of deep trenches, conducting to the Tiber and to the Arone the upland drainage, while the marshes, of which the bottom in many points is below the level of the sea, shall be drained by steam-engines, as has been practised in Holland and also in Italy, where over 80,000 acres of land in Polesina and the Veronese formerly submerged are now reclaimed. Here, we all know, that when a marsh is drained either by trenching or by pumping the first year, and even the second, malaria augments and subsequently disappears only gradually by cultivation and deep subsoiling. The instance quoted of the Lake Agnano, near Naples, proves nothing else. Besides, malaria is very capricious, and sometimes diminishes for some years, afterwards to reappear under a new form. This occurred in the Tuscan Maremme, where, in 1861, the division of the fresh water from the salt marshes was believed to have vanquished malaria, while a formidable epidemic of fever in 1863 showed the necessity of again recurring to warping, after all, the most effective process of improvement. I do not think that trees absorb malaria; this is shown by the lowest parts of the Agro Romano, which are well wooded, and yet the most unwholesome. Trees may form a curtain, as at Ravenna, between the marshes and a certain tract of land which thus remains sheltered. But, beyond a certain distance the malaria brought by the wind resumes the ascendant. In my report I purposely abstained from expressing any opinion on the instrinsic nature of malaria, simply stating the various theories held respecting the environs of Rome. So long as it is admitted to originate from stagnant waters, how it is produced matters little. But the meteorological data I have collected regarding many Italian towns may hereafter contribute to elucidate the question. The higher parts of the Agro Romano are but a succession of knolls and hillocks, intersected by ravines and deep-set torrent beds. I do not expect that cultivation alone can purify the air, but it will dispose of the numerous small springs and puddles, which are calculated to number over 15,000, and which, although each very small, in the aggregate powerfully contribute to maintain malaria. Cultivators will be interested in removing them, while under the present system there is a motive to foster them, as those damp patches remain verdant, and feed the cattle long after the summer's heat has parched the remainder of the land. Those who believe that cultivation on a large scale (not necessarily inherent to extensive landholding) should be applied to the whole of the Roman Campagna, err in thinking it a flat and level plain. In point of fact, there is no level country, excepting just along the sea shore and the narrow valley of the Tiber. All the rest is undulating and hilly. In this part some deep soil may be found near the river courses, but the crests on the knolls have only a few inches of earth spread over the solid volcanic tufo, the surface being everywhere sharply inclined. In our climate only hand labour can properly deal with hilly slopes, and those of the Agro Romano must be planted with Vines, Olives, Figs, Almonds, and Oranges, as (except the last, which are of modern introduction) they were in ancient days; only such cultivation requires a dense population, which now is kept away by malaria. The drainage of the large marshes must first begin to purify the atmosphere; next, the present system of agriculture may be gradually modified, keeping in the plains extensive cultivation improved by modern appliances; after that, planting may begin on the hills, which, little by little, will absorb the watery percolations and still further improve the air. Thus in course of time we may see the Roman Campagna restored to cultivation like some other parts of Italy—for instance, the neighbourhood of Novara.—*M. Pareto.*

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—Little can be done in this department whilst the weather continues so winterly. Protection should be given to all plants likely to suffer, owing to their unseasonable advancement in growth. The finer kinds of Roses, especially standards, should have their tops tied loosely together and protected with some sprigs of broom. For herbaceous plants a layer of rough leaf-mould, tan, cocoa-nut fibre, or similar material should be applied around their necks and over their roots, taking care, however, before applying it to remove the snow. Beds containing Lilies and other bulbous roots should also have a coating of the same material or of rotten manure placed over them. The most tender kinds of shrubs and Conifers should have some dry Fern strewed over them; clean straw may be used for the same purpose, but it is apt to harbour mice. Broom, Fern, and mats form the best protectors, the latter being supported on stakes. Snow should be removed from the branches of choice trees or shrubs, more especially those of Conifers and other Evergreens, which it is apt to break. All newly planted trees and shrubs should have strong but neat stakes affixed to them. Pruning in general should be discontinued for a time until the weather takes a more favourable turn.

Conservatories.—These are now gay with Dutch bulbs, Cyclamens, Chinese Primroses, Cinerarias, Camellias, Azaleas, forced shrubs, Epacrises, Heaths, Acacias, and a few other plants. The pretty water-plant, Aponogeton distachyon is in full flower, both in the coolest part of the greenhouse and also in cold frames; it is so easily grown, too, that a large inverted bell-glass, or flower-pot or pan with all holes stopped up, forms a sufficient home for it. Pot, cut back, and start into growth in the warmest corner of the greenhouse, some Fuchsias and Lemon-scented Verbenas. Some Cineraria seed may be sown in gentle heat to furnish flowers late in autumn; and young Cyclamens may be pricked off into pots or pans. Mignonette should now be sown in pots for early blooming; plants of it that are up should be thinned, and Tree-Mignonette should be trained and tied into proper form. Pelargoniums may be shifted and placed in a warm corner of the greenhouse. Tropæolums should be trained twice a week, and, as soon as their flower-buds are well set, weak manure water may be freely given to them. Remove dead foliage from Carnations in pots, and stir and top-dress the soil. Divide and repot plants of Isolepis gracilis, and place them for a time in a moist heat. Selaginellas may also be separated, and potted in a mixture of loam, peat, and leaf-mould in equal proportions, with a good admixture of sharp sand. Borders of these little plants may also be renovated. If a good stock of seedling Ferns is at hand, one or two of a sort may be stuck into a pot containing Hyacinths and Tulips; they hide the surface soil, and render the pots more pleasing in appearance. Greenhouse Ferns should be kept as dormant as possible yet, especially such as are deciduous, and also hardy Ferns in pots, but a dust-dry condition is injurious.

Hardy Fruit and Kitchen Garden.—While the snow lasts little can be done out-of-doors. Soil cannot be turned up with advantage, neither can seeds be sown. Even the planting of early Potatoes, which is a matter that now requires attention, had better be delayed for a short time. If Potatoes must be had very early, start the sets indoors, placing them thickly on light soil, and in a fortnight hence or thereabouts transfer them to a warm border, facing the south if possible, and where the soil is rather light. To prevent snow or frost from locking up, as it were, vegetables required for every-day consumption, rank litter must be freely strewed over them. Scrape off the snow from a portion of the Celery ridges, and apply 6 inches or so of litter thereon, so that no delay may be occasioned in getting up the crop. For the same purpose remove the snow from amongst a portion of the Leek crop, and place some litter between the rows. A bed of Parsley should be hooped over expressly for winter use, and immediately on the appearance of frost some Pea-stakes, evergreen boughs, mats, or any other material at hand, should be thrown over the hoops; and should very severe frost set in, some Fern should even be placed over the whole. Some Chives for early use may likewise be protected; also some Parsnips and Jerusalem Artichokes; in fact, the two latter should be lifted altogether, the first to be stored and the room given to other crops, the last to be replanted. Turn manure heaps at the same time, saving the roughest litter for protecting vegetables and for covering frames; the more decayed part can be used for spring cropping. Manure and leaves for hot-beds should also be turned and well mixed together. Tools should be repaired, baskets mended, canvas screens for protecting fruit trees put in order, nets for placing over seeds got ready for that purpose, and many other things done for which time cannot be spared hereafter.

Ice-houses.—These may now be filled. Whatever may be their form the following points must be observed, viz.,—thorough drainage, the outlet being in the form of the letter S, and linings of clean dry and non-conducting materials; over the floor, which should be firm and level, should be put some faggots or a wooden grating to prevent the ice from touching the floor, which is of a higher temperature than that of the ice; therefore, faggots covered with straw, being non-conducting substances, are useful in such a position and are also essential for drainage. The sides of the pit, house, or cone should be protected from the external atmosphere by a thick and close lining of clean straw, Heather, or Fern, and the top should be covered or thatched with the same materials. Sunk houses or pits cannot always be sufficiently well drained. In such cases a conical mass should be erected above the ground level, in a position partially shaded by trees and having a northern aspect. A blunt-ovate or spherical shape is best, and is that which is generally adopted. Both for heaps of this kind and for ordinary ice-houses, the cleanest and best ice should be selected, and in the operation of packing broken with wooden mallets, the small portions being made to fill up the interstices between the larger lumps, so as to make all solid. Some clean freezing water may also be advantageously poured over the mass with the intention of making all solid.

NURSERIES.

Indoor Department.—Mats should be run along the upright sashes around the various houses, in order to economise heat. A narrow straw mat should be placed before each door, to prevent the ingress of cold winds. All cisterns should be protected from frost with straw and mats; pumps should be encircled with straw ropes, and a lining of litter or straw should be applied to the sides of frames. Mats and litter should also be placed over the sashes of these in frosty weather, and in the event of a continuance of piercing frosty winds or snow the covering may remain undisturbed for a day or two, but immediately the least thaw comes all snow must be removed. Rather than endeavour to maintain an extra high temperature during cold frosty weather allow it to decrease a degree or two. Sheds should be cleaned out and soils of various kinds housed, so that they may be in a usable condition when required. Pots should be washed, dried, and laid in proper position according to their respective sizes. Crocks should also be washed in a big tub or trough by stirring them round roughly with a strong stick. When thoroughly cleaned they may be taken out, sifted, the larger pieces broken into suitable dimensions, and laid up in heaps to dry. A portion may be pounded rather finely for mixing amongst the soils used for many plants. Charcoal should also be obtained and stored safely, likewise chips of fine sandstone, for which the roots of many plants have a particular liking. New labels should be got ready and old ones repointed and made smooth with a sharp knife. Sphagnum, if wet, should be placed on an elevated wooden framework to dry. In propagating pits, more particularly those for stove and ordinary soft-wooded plants and seedlings, a high temperature must be maintained, whereas in the ordinary grafting and hard-wooded greenhouse plant pits, a minimum temperature of 50° is sufficient. If the tops of sub-tropical plants have been used as cuttings, encourage the side shoots on the stock to grow by means of heat and moisture, and as soon as the young shoots are a few inches in length use them for the same purpose. Continue to sow seeds as they are bought or imported. Prick off in sandy soil liberally enriched with leaf-mould, Lobelia and Mimulus seedlings; also any others that are large enough. Prick off seedling Yuccas and place them in the coolest portion of the propagating house. Sow some Statice seed, also seeds of Camellias, Azaleas, &c., for stocks for grafting on. Take off the tops and points of shoots from the sides of plants for cuttings. Repot some of the Pitcher plants in good spongy soil. Marantas may also be divided and potted singly; indeed, such stove plants of which increase of stock is the object, should be increased vigorously, and young plants potted and kept growing. It is not advisable, however, to keep established plants growing during the winter months. Roots of Cannas should be started into growth in a few inches deep of light soil placed on a bench in a warm pit, or they may be potted; but by the former method they can be lifted and divided more easily, and afterwards each shoot may be potted singly. Seeds of Cannas may also be sown. Dahlias may be started in any position in which heat and moisture can be applied, and the young shoots should be taken off and inserted as cuttings when they are 2 inches or so in length.

MARKET GARDENS.

Winter has come at last, and though much needs to be done, it would be unwise to attempt to plant, or sow, or dig, whilst the weather continues as it is. Seeds would perish if sown now, plants would die if transplanted, because there is no heat in the soil to excite vegetation; we must therefore direct attention chiefly to the manure heaps. Turning them, shaking out the rankest for protecting material, and carting the decayed to the various quarters to be manured, must constitute the principal operations at present. Should the roads be soft, however, the carting may perhaps be deferred for a time. Mushroom beds should have the snow scraped off them, and additional coverings applied to them if necessary. Rhubarb, Seakale, and Asparagus beds should also be relieved from snow, and extra linings applied to them, in order to maintain the required amount of heat. Radishes in beds must be closely protected, and birds particularly watched, for, being deprived of other food, they do not hesitate to avail themselves of whatever seeds they can pick up. Should frost be likely to continue, litter should be spread over Celery ridges, and between rows of Leeks, to prevent these crops becoming "locked" up. Over Endive on ridges some rank litter should also be strewed, to save it from frost. Onions, Carrots, Celery, Lettuces, Cauliflowers, &c., in frames should likewise be protected. With the exception of Onions, Carrots, and Celery, a little frost will not injure the others. This is commonly a busy time in the way of transplanting Lettuces, but that operation must now be delayed until the ground is in better condition for their reception.

The Proposed Park for Stratford and West Ham.—The committee appointed at a recent public meeting in Stratford to carry out this matter, have issued an appeal, in which they state that no parish near London has increased more rapidly of late years than West Ham. Not long ago it was a pleasant, well-to-do rural suburb; it is now fast becoming a large manufacturing town. It already numbers more inhabitants than some whole counties, and it has only 8,000 fewer than "the City of London"—an increase of more than 60 per cent within the last ten years. A golden opportunity occurs for securing a beautiful, well-timbered park of 80 acres, including the garden allotments, in the very heart of this vast population—an oasis in what will, in a few years, become a desert of bricks and mortar. It is a case of "now" or "never;" for if not secured at once the park will shortly be cut up for building, and will soon be covered with small houses. The owner of the park, Mr. John Gurney, offers it solely for a public park, on the following liberal terms. He assumes that its market value is £25,000, which the committee, after careful investigation, believe to be a moderate estimate. Towards this amount he guarantees that members of his family (who, from their long connection with West Ham, retain a warm interest in its welfare) will subscribe the munificent sum of £10,000. In addition to this, Mr. Gurney expresses himself willing to allow a portion of the balance (say one-half) to remain on mortgage for five years, at a moderate interest. Thus the immediate outlay necessary to secure this great boon to the parish would be comparatively small. The committee, therefore, urge that it would be most unwise not to take advantage of this generous offer. As to the question, How can the money be raised? the committee think the means cannot be found in the rates, which already amount to 8d. in the pound. If done at all it must be done by private effort. The residents and owners of property in the parish must first show themselves in earnest, and ready to do their utmost, and then a successful appeal for help may be made to the public, and especially "the City." If the park be purchased, it is proposed to vest it in the undermentioned trustees, who have consented to accept the trust:—T. C. Baring, Esq., Sir Antonio Brady, T. F. Buxton, Esq., J. Gurney, Esq., Andrew Johnston, Esq., and Colonel White. It is also proposed that the management of the park be in the hands of a governing body, to be chosen by the subscribers. As it is intended that the park shall be kept as a park, and not as a garden, the expenses of maintenance need not be large.

THE GARDEN.

> "This is an art
> Which does mend nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

RENOVATING THE KITCHEN GARDEN.

My attention has been directed to this subject by reading a paragraph in The Garden (see p. 531) in which the writer describes a mode of trenching and manuring adopted by him. His system has, I think, only one recommendation, namely, expedition. He states that his mode of trenching takes very little longer than plain digging, and that he does not bring up too much subsoil to the surface at once; still the ground is partly loosened and allows water to get away. Are we gardeners, then, to adopt a system the chief merit of which is expedition? No; if we can do but little, let us do that little well and thoroughly. Trenching is a most important operation, and ought to be done well and wisely. A man with a strong arm can cast out a trench well, but it requires both judgment and experience to decide how much, or if any, of the subsoil should be placed upon the top. Subsoils vary so much that no certain rule or correct guide can be laid down upon this point. But there is one operation that is applicable to every variety of subsoils, (and if it is neglected, no trenching can be said to be efficiently carried out), that is, loosening and breaking up the bottom of the trench by spade or mattock, as the case may be. The more thoroughly that is done, the greater will be the ultimate benefit resulting from it. Another very important point to be considered is the proper season in which to trench. No doubt autumn is the best time for such work, and the earlier in the autumn it is done the better, before the surface soil parts with its heat.

The next consideration of importance is the application of manure during the operation of trenching. For my part I never trench in manure, and I would fain hope that the practice of burying manure in the bottom of trenches is not now generally practised. The slightest knowledge of chemistry and of the ordinary operations of nature shows such a practice to be a waste of both matter and means. I have an impression that the proper application of manures is just one of those subjects on which many bestow little thought indeed. With regard to farm-yard manure, do we not often defeat the very object we wish to attain, by allowing it to expend its best properties in over-fermentation, or permit them to be washed out by exposure to heavy rains when laid behind some wall or fence awaiting a favourable opportunity to be carried into the garden? Many have a wrong conception regarding the relative quality of fresh and rotten farm-yard manure. Anderson, in his "Practical Gardener," says: "In most cases I would recommend the application of manure that has undergone a degree of fermentation in a hot-bed." Where the dung has been properly manipulated and prepared before being built up in the form of a bed its quality may not be diminished much, but in the majority of places the dung used for hot-beds does not undergo the preparation necessary to secure all its qualities, and for that reason it is of comparatively little value. But the question, pro or con, in regard to fresh or rotten dung, must be decided by the judgment and experience of the gardener. On this point he will be guided in his choice by the nature of the soil he has to enrich and stimulate.

After he has made his choice, a most important operation yet remains, namely, the application of the manure to the soil. All will agree that the better the two are incorporated the greater will be the beneficial result; indeed, to effect this ought to be the first consideration of every cultivator; but this cannot be well done when both soil and dung are in a moist condition, and for that reason dung ought to be, as far as practicable, applied to the soil when both are in a proper state to mix freely together. Even under the most favourable conditions this object may be defeated by an unskilful workman. Many imagine that it needs but little judgment to dig a piece of ground. My own opinion is so much the reverse of this that I would dig all my own ground myself, were it possible for me to do so. In digging, the workman ought to keep a deep and wide opening, so that the newly turned earth and dung thrown well up against the opposite ridge may mix together in rolling down the face of the trench. In heavy soils a steel fork will be found an excellent cultivator. Indeed with me it has entirely superseded the spade for spring "pointing"; in the hand of a skilful workman it pulverizes and disintegrates heavy moist soils in a manner that no other garden tool with which I am acquainted will do. While our agricultural brethren are improving the soil by all kinds of mechanical appliances, are we putting forth our energy to do the same by manual labour? This question I shall leave my readers to answer. But it is to be feared that in many poorly manned places the flower garden often absorbs a part of the labour and attention that ought to be expended upon the kitchen garden. Many may think this a groundless charge against "the object of their affection," but it is nevertheless a case that can be proved. Are there not dozens of medium-sized places in which is made a great show in bedding-out that have now no more strength in the way of manual labour than they possessed twenty years or more ago, when bedding-out was little practised? Therefore, if this be so, some department must suffer. Do we not hear complaints on all sides that old gardens are wearing out; one will not grow Carrots; Onions cannot be grown in another, and some will grow neither the one nor the other. Is there no remedy for such cases?

That the soil in many kitchen gardens becomes so much worn out, that it is often with difficulty crops are raised in them, is a fact too well known to need confirmation. A combination of causes over which a gardener has little or no control often leads to this state of things. A want of sufficient manure, or of strength to keep the garden in a high state of culture, will bring about this result sooner or later, even in the best of soils. Another cause leading to this is overcrowding with overgrown fruit trees. This had rendered the kitchen garden here "a perfect wilderness." The old Apple and Pear trees had been allowed to grow "in wild luxuriance" for well nigh a century. Their great moss-covered boles, hollowed out by age, made a home for rats and other vermin, from which they could not be driven except by the old Border method of "fire and steel." A reluctance upon the part of the family to have these "encumberers of the ground" disturbed "in their time," led eventually to the garden becoming, even in the open quarters, almost valueless as regards the quantity of the vegetables grown upon them. This is doubtless an extreme case, but it is not an exceptional one; for the old system of crowding vegetable gardens with fruit trees frequently led to a state of things similar to what I have described. In our case matters had got so bad that nothing but a thorough and complete renovation of the whole garden was of any avail. With my employer's sanction, therefore, I cleared the garden at once of well nigh the whole of the old trees, lifted the walks and relaid them 10 inches higher than they were before, and filled in the borders around them with fresh soil, mixed with well-rotted dung, to a height of 8 inches above the level of the walks, altogether making a depth of 18 inches of fresh soil. After a thorough preparation I planted those borders with dwarf fruit trees, at a distance of 10 feet from the walks. At the same time I covered with fresh soil and compost about a seventh part of the garden, to the same level as that of the surrounding borders. For six successive winters I have continued to cover a portion of ground, in extent equal to that done the first year. Next winter will see the whole garden renovated from end to end. This may be considered a slow process, but it is not too slow to accomplish the object aimed at, and besides it has been done at an outlay little beyond the ordinary expenses connected with the garden. By this process, too, I have been enabled to establish fresh plantations of fruit bushes, Asparagus, and Strawberries upon the newly-prepared soil, before doing away with the old. The dwarf fruit trees planted six years ago are now so well established that I am just now rooting up the last old tree. The vegetables now produced in the garden are of superior quality. On the 15th of last October I was enabled even to gather a dish of young Peas.

I may, however, remark that late Peas are by no means an uncommon thing in our northern counties, when frost keeps off until late in autumn. The most noticeable point connected with the Peas in question was their exquisite flavour at such a late season. The variety was "The King of the Marrows," which with me is an invaluable Pea, bearing every autumn until killed by frost. The question is, however, simply this: Is the process of renovation just named practicable in the generality of places? I say yes; in many cases fresh soil would be preferable to dung itself, which may have been applied year after year to the same ground for several generations. Another advantage gained in renovating a garden with soil is that where the staple is light, soil of a heavier texture may be added to it, and *vice versâ*, when the original soil is heavy, a lighter compost might be applied.

The next most important consideration is, will the ultimate benefit repay the labour and outlay attending such a system of renovation? Doubtless it will, where the requisite material can be conveniently had; but, under any circumstances, I consider the kitchen garden so valuable that labour and expense ought to be only a secondary consideration in making it every thing that skill can accomplish. No department requires more forethought than the kitchen garden. J. T.

NOTES OF THE WEEK.

—— A meeting will be held this day, at noon, in the Charing Cross Hotel, to discuss the matters to be brought forward at the adjourned meeting of the Royal Horticultural Society next Tuesday.

—— Northumberland House is doomed. The object for which this noble mansion is to be acquired by the Board of Works, at the round sum of half a million of money, is the connecting of the Thames Embankment with the system of thoroughfares that converge at Charing Cross by a street which is to pass over its site.

—— Those interested in sending plants or seeds to friends abroad will do well to bear in mind that under authority from the Post-master-General of India parcels not exceeding 50 lbs. in weight, and 2 feet by 1 foot in size, and £20 in value, are now conveyed by the Peninsular and Oriental Company from London to any post town in India at a uniform charge of 1s. 4d. per lb. Full particulars may be obtained on application to 122, Leadenhall-street, E.C.

—— At the meeting of the Royal Horticultural Society, held on Wednesday last, Mr. Green, gardener to W. Wilson Saunders, Esq., exhibited some exceedingly useful plant labels. They consisted simply of cast iron of various forms for large plants; that part which is inserted in the earth was painted lead colour, and that for writing on white. After the white portion has become thoroughly dry a coating of black paint with a goodly admixture of drying incorporated with it, is applied over the white, and four or five minutes afterwards the name may be written on it. A flat piece of board with a hole in it for the reception of the shank was also exhibited, and by means of this a rest for the hand in writing is obtained, without any fear of touching the paint. The names are written with a pencil consisting of a piece of wire inserted into a wooden socket. The writing is white, somewhat resembling that done with a fine camel-hair brush, and it is extremely lasting; for labels made and written on in the manner described were quite as good, clear, and distinct after five years' wear as those newly written on. For small pot plants zinc labels painted and written on in the same way are neat and legible. No delay need be experienced on account of wet paint, for a certain quantity can be painted first, and after a lapse of five minutes written on without halting.

—— Amongst subjects for competition for which prizes are offered by the Scottish Arboricultural Society during 1873, we find the following:—For the best and approved report on the most extensive, complete, and judiciously arranged Arboretum, the "Lawson Prize" of five guineas; 2nd prize, a medal. The author must describe the positions as to soil, exposure, elevation, &c., of the respective species and varieties of trees reported on, and state their ages, treatment, cost, and mode of planting adopted. Arboretums reported on in 1872 are excluded.—For a full and complete, but succinct and well-written account, from published descriptions, with authorities distinctly quoted, personal observation, and experiment of the history and present state of the cultivation in Great Britain and Ireland of Cedrus Deodara (C. Libani, and C. atlantica, all now classed as one species). Special medal, value three guineas.—For an approved report on the results obtained by experience of seedlings of Coniferæ, being the produce of trees grown in Britain, as compared with plants obtained from foreign-ripened seed. A medal.—For an approved report on the natural history of beetles and other insects which affect Coniferæ—their modes of operation upon the tree, and suggestions as to a remedy for their attack. A medal.—All essays and reports must be sent to the secretary, Mr. John Sadler, Royal Botanic Garden, Edinburgh, not later than the 25th of September next.

—— Mr. Stephen Maple, under-gardener to F. Philips, Esq., Lee Priory, Wingham, has met his death under singular circumstances. He was training a creeping plant of a poisonous nature (probably a Euphorbia), when he was pricked in the hand by one of the thorns. Mortification set in, and he died in great agony four days afterwards. He was 77 years of age.

—— We learn, from the *Journal of Botany*, that a sixth century of M. C. Cooke's "Fungi Britannici Exsiccati" has appeared. Several new species are included. Uromyces Salicorniæ, Adocephalum roseum, Peziza Typhæ, and Venturia atramentaria. Helotium puberulum, Fckl., and Capnodium salicinum, P., two species not previously found in Britain, are also included.—The herbarium of Prof. Hoppe has been acquired by the Gymnasium of Salzburg. Prof. Fee, of Nancy (late of Strasbourg), has presented his herbarium to the Museum of Rio Janeiro. The herbarium of Prof. Meisner, of Bale, has been purchased for Columbia College, New York.

—— The Executive Committee of the American Pomological Society have decided to fix September 10th, 11th, and 12th for the meeting this year in Boston. Although sixty acres of that city is burned, we are pleased to learn that no part of their disposition to welcome their friends has been consumed by the devouring element. The work done by this society well deserves the attention of European pomologists. Much of the vast improvements witnessed in America of late years, in reference to fruit culture, is owing to the wise action of this society. In its catalogue the value of every important variety of fruit in each State may be seen at a glance.

—— A small district round the city of Florence seems to be at present the chief, if not the only source of Orris-root. The plants yielding it are Iris florentina, I. germanica, and I. pallida, and the scraped rhizome is the portion of the plant which occurs in the market as Orris-root. Large quantities of these roots are used by perfumers for the purpose of blending with other essences, and it is also largely used for tooth powders, and for the composition of what is commonly known as violet powder. Orris-root contains an essential oil, which is obtained by distillation, in the form of a fatty substance similar to Cacao butter. This substance is yielded in very small quantity, and is even more costly than otto of roses; it possesses all the fine aroma of the original root.

—— M. Roezl, on his return to America last year, for the purpose of continuing his botanical explorations in the western regions, met with a serious loss at Denver City (Colorado). Before setting out on an excursion to the Rocky Mountains, he entrusted nearly all his money (20,000 francs) for safer keeping to the landlord of his hotel. During his two days' absence the book-keeper of the hotel (a Dane) contrived to get possession of this money, and decamped with it to the mountains, where pursuit was out of the question. We do not know whether the American law will afford M. Roezl any redress from the landlord who took such bad care of what was confided to him, but we trust that reparation will be made to him. Notwithstanding the unexpected and very embarrassing diminution of his resources, M. Roezl proceeded undauntedly and hopefully on his way westward.

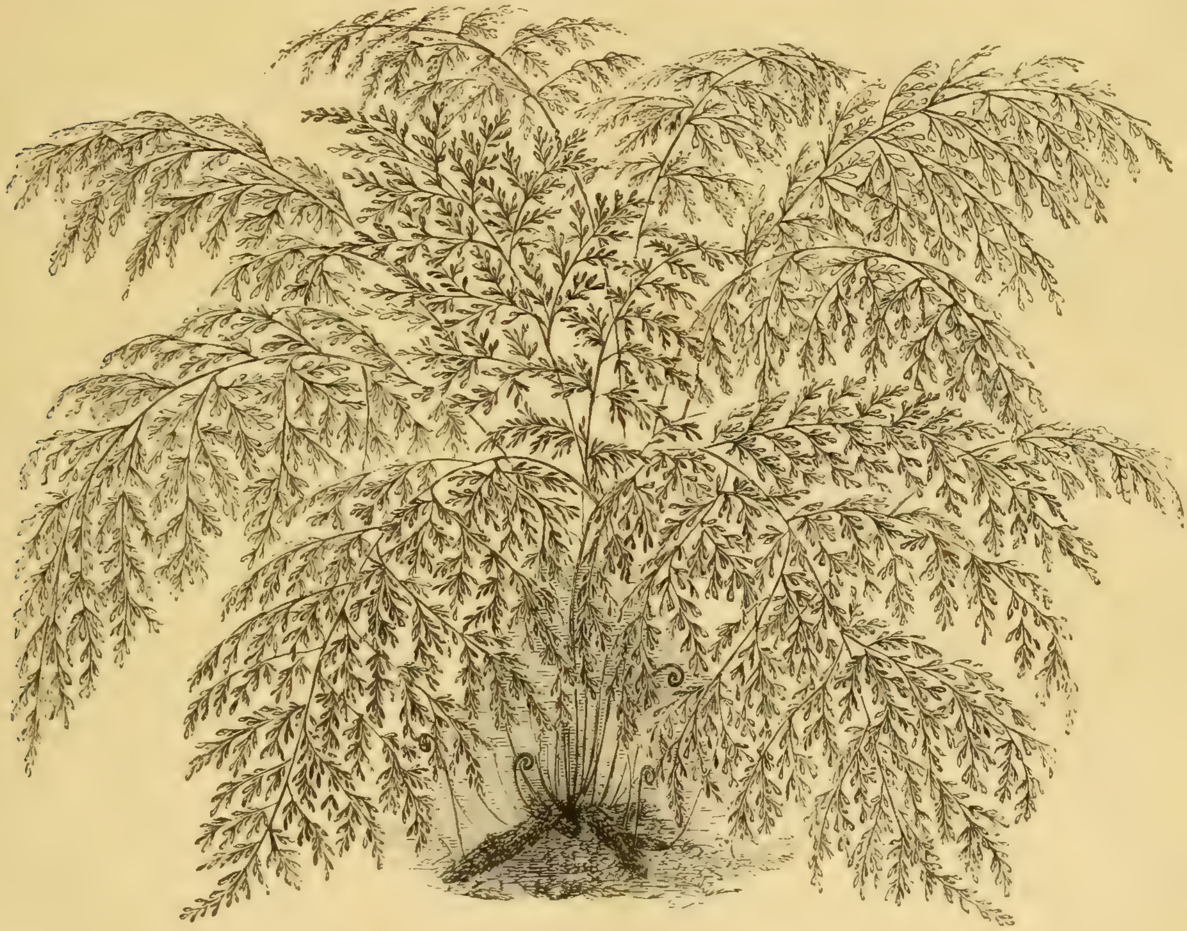
—— Dr. Meymott Tidy, who is acting as medical officer of health for the City during the temporary absence of Dr. Letheby, reported the seizure and destruction of a large quantity of rotten figs which had been found at some of the City wharves by the sanitary inspectors; and he further stated that an enormous quantity of bad figs had been imported into this country, and now laid at wharves in bond. These figs, which had been bought up to be used as food, in the shape of jam, were full of maggots and were quite rotten. They were principally used because their seeds gave the jam the appearance of being made from *bona fide* fruit, and they were mixed with seeds, the nature of which he had not yet been able to find out, but which in the market were called "Turkish seeds." The poisonous compound, which could not be used until its nature was thoroughly hidden from ordinary observers, was mixed with one-tenth part of Raspberry jam, and was then sold under the name of "family jam," "household preserves," &c. These mixtures were sold to poor persons and children in small quantities, frequently on pieces of paper, and lives must of necessity be lost through its becoming an article of consumption. He had taken the trouble to purchase some of the jam as it was sold retail, and by analysis had discovered that those who made it had not hesitated to use common glue to cheapen the compound. He received from the commission power to force open and examine the boxes of Figs at the wharves where he knew them to be lying, and to destroy them.

THE INDOOR GARDEN.

DAVALLIA MOOREANA.

This is one of the most beautiful of Ferns, and one that will eventually stand in the first rank amongst exhibition kinds. It is a native of Borneo, whence it was introduced to the nurseries of Messrs. Veitch and Sons, of Chelsea, by their collector, Mr. Thomas Lobb. Its rhizomes are rather shorter than those of most of the Davallias, are covered with dark brown scales, and are more inclined to conceal themselves in the soil than those of the majority of the genus, many of which have such vigorous rhizomes that not only do they traverse the soil, but project over and down the sides of the pot in which they are grown; or if in suspended baskets or on the trunks of tree Ferns, they twist around them, and under favourable circumstances form as it were a net-work enveloping the basket or trunk on which they may be grown. The shortness of the rhizomes in D. Mooreana, and their partiality to the soil, as well as the stately habit of the plant, plainly illustrate that pot culture is the most suitable method of growing it. The entire length of the fronds of a plant of this Fern, at present in Messrs. Veitch's nursery, is nearly 4 feet. They are extremely handsome and gracefully arched. The outline of the pinnæ is triangularly acuminate, the base being slightly narrower than the length of the sides. These are again sub-divided into numerous little divisions bearing a great number of small blunt oblique segments. The fronds are densely laden with elongated cup-shaped sori, deeply set on the under side, and they consequently give the upper surface a conspicuously dotted appearance. The colour of the leaf-stalks is pale green tinged with brown, and that of the upper surface of the fronds pale green. Ordinary stove treatment suits this Fern well; but it will also grow and flourish in an intermediate house. A low temperature and comparative dryness, but not too much so in winter, causes it to form large fronds in early spring, when additional heat and moisture are afforded it.

W. F.



Davallia Mooreana.

FORCING CAMELLIAS.

"Force Camellias! Yes; force the buds off with a rush, like a shower of fast-falling hail, excite the plants prematurely, weaken them beyond the power of bud-forming at all, convert them into evergreen bushes—fresh, glossy, shining, but flowerless!" Well, I admit that all that and more and worse may be done by attempting to force the Camellia. More; that as generally understood, the Camellia cannot and ought not to be forced. That, moreover, firing has, as a rule, resulted in forcing off the buds and injuring the plants. Still, I am about to advocate the forcing of Camellias, and to affirm that they rank among the best and most effective plants for that purpose; nay, that Camellias cannot be enjoyed at the right season without forcing. What, it may be asked, is the best season for the Camellia? Its flowers are ever useful—always beautiful. But if there is a time when their beauty culminates and their usefulness likewise, it is from October to January inclusive. During these dull months their pencilled beauty comes out with a delicacy and perfection of colouring that is seldom equalled at other seasons. Spring sunshine plays havoc with the colouring and duration of Camellia blossoms. Perhaps November fogs, if allowed to lie upon them, are almost equally destructive; but the one is easier mastered than the other. A careful use of the watering pot, the prevention of drip, and a sweep of dry air from the heating apparatus, will prevent and chase away the damp. Camellia blossoms, too, seem to glory in the quiet unexcited days and nights of the dead season. They expand slowly, and never are they more lovely than when half open. As the pulse of life beats quicker in spring, we can hardly say that we have Camellia flowers, so soon are they over. Camellias are November's Roses—Roses of the best in all but fragrance; they delight all hearts. As to their forcing, I speak from experience. I had once the care of six magnificent plants of double white Camellias. By peculiar management (once for all only) they were led to flower from November to January—one of them nearly a month earlier. Two fine single white Azaleas were treated in the same manner, and flowered at the same time. These eight plants with a fine specimen of Rhododendron arboreum, and another of R. Russellianum, made a summer-tide beauty in a large conservatory every year, all through the winter. How was it done? Nothing could be simpler. There are two seasons for forcing. This is well recognised in fruit culture, but seems to have been much ignored in the forcing of many flowers, especially the Camellia. In the last state, preceding flowering, it is a bad forcer. The buds are impatient of warmth, when they are about to open. They have a great deal to do to unfold all their closely packed petals, and they must have time to do it in. But in the making of their growth, and the formation of their flower-buds, they enjoy genial and liberal treatment. They may even be exposed to a tropical climate, not only without injury, but with apparent benefit, provided it is moist enough. Shade them from bright sunshine, preserve a moist atmosphere, and feed the roots freely, and fine shining leaves will be made in abundance, and any number of flower-buds will be set on the ends and sides of the newly-made wood. Continue the warm treatment until the wood is partially ripened, the flower-buds well plumped-out, and then gradually reduce heat and moisture, and finally remove the plants into a cool house, or a sheltered spot out of doors, towards the end of July. Finally, in September let them stand behind a north wall. On the first of October house them in a genial temperature of 45°, and almost immediately the buds will open large and full, and the flowers unfold in all their freshness and beauty.

In fact the Camellia forces well, but the forcing must be given about eight or ten months before the flowers are required. You want Camellias to bloom next October and November; very well, begin to force the plants now, hurry growth on in a genial temperature, even though it hurries off all the blossoms. Place the plants in a Vinery or Peach house "at work," and keep them there until the growth is finished and the flower-buds are set. In the pushing, setting, and maturation now and through the summer months consists your forcing of Camellias for next autumn-tide. Then you will only have to let loose the beauty that is securely bound and treasured up now. In a word, all this is the merest truism in regard to the forcing of Grapes, Peaches, and other fruits. Three parts at least of the forcing for one season have invariably been done the year before. We have only to apply the same rules to Camellia forcing to reap rich harvests of bloom from October to January. The process too becomes easier every year. Sometimes the plants need no forcing after the first season. This was the case with the large ones already adverted to. Early Camellias were indispensable. I took charge of them in November rather out of health and scant of bloom. About the middle of December they were plunged in a bed of tan in a forcing house. The few flowers came out and went off with a rush, but they made fine growth and set hundreds of buds. By the middle of June they were in the open air, and some flowers were out in September; but the great show lasted from October to January. As to succession of blossom, a great deal may be done to provide it in the choice of buds of all sizes when thinning. If the largest only are left the flower is soon over, if the smallest are selected, it will be late; but by leaving some of all sizes we have flower early and late and all the way through.

Again, Camellias once forced, come naturally early ever afterwards. My plants had never any special treatment but once. When the flowering season was over they were simply moved to the shadiest side of the conservatory, to make their growth, and they began to flower ever after in October. The Azaleas phœnicea and alba and Rhododendrons did likewise. Azaleas, however, bear forcing well at the flowering period as well as in the previous summer—though the riper the wood, the more plump the blossom in the summer, the less forcing is needed in the winter and spring. Camellias, on the contrary, only can be forced successfully, say eight months, before they are wanted to be in blossom. I almost wonder some nurserymen do not turn their attention to the culture of a class of Camellias specially for forcing. Their capacity varies somewhat in regard to this, and I would almost venture to state that the less double the better they would bear direct heat to their blossom buds. The single kinds furnish nice flowers for button-holes. Some of the semi-double sorts, such as Elegans, Lady Campbell, Tricolor, &c., force well directly while no variety with which I am acquainted refuses to be forced in the indirect way now prescribed. D. T. FISH.

HOW TO FORM TREE MIGNONETTE.

MANY have been of opinion that tree Mignonette was a distinct variety from that in ordinary cultivation, and in many gardens it was thought necessary to propagate it from cuttings in order to perpetuate its arborescent character. Time, however, has eradicated that notion. Nevertheless it must be admitted that by a process of selection, by saving seeds from the strongest plants bearing the largest flowers, a vast improvement has taken place in Mignonette, and that several varieties, more or less permanent, are now offered in seedsmen's catalogues; but the arboreal character of Mignonette depends entirely upon culture and training. Tree Mignonette may be grown to any size, from 1 to 6 or more feet in height, and may either be trained to a single stem with a bushy head at the top, like a standard Rose, or as pyramids. The latter form I consider to be the most natural and pleasing, although, at the same time, it may be desirable to grow a few standards also. To have strong, well-developed Mignonette trees for autumn and winter blooming, the seeds should be sown in April in small 60-sized pots, three or four seeds in a pot, and placed in a warm frame or pit near the glass. Although Mignonette will grow in almost any kind of soil, still, if large plants are wanted for the conservatory, they must be treated liberally, if they are to have any degree of permanence, as Mignonette in pots under glass, with the seeds and dead flowers constantly picked off, assumes a perennial character. I have generally found, however, that after two or three years the plants lose vigour, and that though there is no question about their freedom of flowering, the flowers lack strength and substance; therefore, unless very large specimens are wanted, it is as well to raise at least some of the plants annually. The best compost for Mignonette is a good sound loam, with about one-fourth of its bulk of thoroughly decayed manure, reduced almost to the appearance of black mould, if obtainable, with a good sprinkling of charcoal broken small, or old mortar or plaster from old buildings, and in all cases let the pots be well drained. When the young plants are large enough to distinguish which is likely to make the strongest specimen, let that one be retained and the others drawn out, so as to have only one plant in each pot, and let that be secured to a short stake to keep the stem straight. Shift the plants into larger pots as they require it, never allowing them to become pot-bound, and keep the leader always in advance, pinching off all flowers, and any shoot that seems desirous of outgrowing its fellows. As the season advances the plants may be placed in a deep, cool, rather moist pit, or any place, such as a north house, where the heat of summer will not, by causing the undue ripening of the wood, check the growth and push the plants into flower. Till the end of August the object should be growth; therefore, keep the plants in a growing atmosphere, and see that they do not get pot-bound; and let each plant be supported with a good stake in the middle of the pot, with the main stem tied to it. But any one who wishes to see what size Mignonette is capable of growing to under favourable conditions, should select one or two of the most thriving plants when they have attained a height of 3 ft. or so, and plant them out in good soil in the conservatory border, and only allow them to bear a few flowers the first winter. Plants so treated without check, and attended to in pinching and training, will show that the prefix "tree" is not a misnomer. If standard plants are desired, the side shoots must be pinched back to one pair of leaves—that is, leave one clear joint from the stem. When the leader has attained the requisite height and the head is formed, those little spurs may be cut off. In potting, the last shift should not be later than the end of August; and when blooming begins, a soaking of weak liquid manure may be given occasionally. E. HOBDAY.

DRUMLANRIG CASTLE,

One can hardly fail, on approaching fine demesnes in Scotland, to be struck with their extent and apparent publicity. Some of the parks and woods are almost as large as an English county. The estate of Drumlanrig, for instance, covers nearly one-third of Dumfriesshire. The home grounds are of vast extent, stretching out in all directions from the castle, until the boundaries merge into mountain moors or sheep-walks. There are neither approach lodges nor boundary walls. All is open and free, and apparently boundless. One drive alone, of rare beauty, following the rocky gorges of the river Nith, extends for seven miles, and is worthily called the Duchess's drive. A grand road, 30 feet wide, with broad turf, and noble lines of trees on each side, rushes off and out from the front door of the castle, straight as an arrow, until it loses itself among the hills. Another fine road skirts a noble wood on one side, and a home farm on the other, all the way from near Thornhill to the castle. Of green drives through the most charming scenery, there seems literally no end: there is, I believe, something like 80 miles of them. The scenery is of the richest description. The ground is what would be called rolling, and it rolls up into real mountains on several sides, while the corn-fields are as fertile as those of the south, and the herbage in the valley of the Nith is splendid. All varieties of scenery are within view. Rising from the walks and roads the eye reaches rolling sheep-downs and far-reaching forests, magnificent trees in parks and pleasure ground. Then comes the regions of brown or glowing purple Heath, and shaggy woods, or towering mountains, or far-reaching arable land, with the Nith, or other rivers, winding about like silver shields, and threatening to overflow the valleys with their raging, foaming waters. These Scotch rivers, tumbling down headlong and impetuous, give life to the landscape. Of such character is the Marr burn, that bounds the flower garden on one side. As to the castle it is impossible not to be struck with its beauty and grandeur. On the east rises the Queensberry range. The views to south, south-east, and north are very extensive and beautiful. Many of the trees in the park are very fine. Near the castle is a grand Sycamore over 6 feet in diameter. The forests, which are extensive, are of modern date, and planting is still going on.

There is a flower garden here of some fifty acres in extent, that was beautifully, variously, and richly furnished last autumn, though rain poured down almost the whole summer. The style around the castle is what has been facetiously called the "fortification style." These grand old castles no longer need the support of cannon or stalwart heroes clothed in iron mail; but they do need the support of bright flowers, noble terrace walks, and bold massive retaining walls to let them down with dignity, as well as grace, to the smooth level of modern life. The south side and east and west ends are based with a fine level gravel walk, about 30 feet wide. Then follows a slope of turf at a sharp angle, of great depth. At each end of the building, on the next level, is an even space of ground some 70 yards square. One of these, the west end I think, is laid out as an herbaceous garden, chiefly furnished with autumnal-flowering and sweet-scented flowers, such as Carnations, Roses, Phloxes, Mignonette, Asters, Stocks, Fuchsias, Pelargoniums, &c.—a rich assortment. This garden is bounded by masses of Laurel, rising one above another like terraces. These are pruned once or twice a year with the knife, so that no leaf is cut asunder, and they are kept to a height of 3 or 4 feet. On one of those wide Laurel terraces fine old Yews rise up at intervals, in massive sombre grandeur. These are supposed to be as old as the castle itself, viz., about two hundred years old. These Laurel banks or terraces are important features at Drumlanrig. They form one side of the chief flower garden, cover many acres of ground, form walls of green to some of the walks, and lose themselves among freer or more naturally-grown trees and shrubs. On the ground at the other end of the castle is an American garden, which is chiefly furnished with noble specimens of Rhododendrons that were planted, I believe, when the present duke attained his majority. These are illuminated in autumn by a few flowering plants. Both of these end gardens are flanked, next the grand terrace walks, with a chain pattern, in which, in the one, the centre circles are filled with Golden Chain, in the other with Crystal Palace Gem Geraniums; and the sides are filled in with the dwarf blue Ageratum and the Tropæolum Cooperi. This threefold chain of bright colours had a very chaste and pleasing effect. Then follows a noble promenade of gravel, about 250 yards long and 24 feet wide, bounded with a massive balustraded stone wall over 20 feet high from the lower side. This noble walk completes the secondary base, as it were, of the castle. It skirts the bottom of the steep turf slope, and the scrollwork outside the mixed and American gardens, and overlooks the entire series of flower gardens on lower and different levels to the south. It is a magnificent finish, a noble promenade—speaking of simple grandeur—worthy of its position, and one which adds dignity to the castle. From this terrace the lower gardens are nearly all under the eye. Fine marble flights of steps lead down to the lower level.

Immediately under the terrace walk there is a border, and the wall is well furnished with Roses, Magnolias, Maidenhair tree, Clematises, Paulownia imperialis, trained and pruned close like a Pear tree, Virginian Creepers, Corydalis lutea, Tropæolum speciosum, Laurustinuses, &c., all in remarkably fine condition; while lovers of Ferns are charmed by the sight of myriads of Asplenium Trichomanes springing out from, and adorning with rare beauty, every crevice. Immediately in the centre of this space, the Heath garden covers an area of nearly 5,000 yards. The groundwork of this is of silver sand, and through this massive lines, 20 feet wide, of Mountain Heath, closely clipped, meander along curves of elegance and lines of beauty in all directions. The centre is arranged on the parterre system, and filled with flowers, the beds being edged with stonework interlaced with white sand. Lest, however, so much brilliance and whiteness reflected by sunheat should dazzle the eye, we have only to look to the west, and on a somewhat higher level we behold an acre of specimen Hollies, Yews, Cypresses, and other trees and shrubs; or if one wants more colour, turn to the east, and in the lower white sand garden will be found beautiful lines of bright colours, distinct in outline and furnishing from those in the upper garden. Here the corresponding space filled by Heath in the other garden is converted into a pretty margin of diamond-shaped beds, defined by Box, and traversed by paths of white sand. The centre of the design is formed of flower beds on grass and gravel, and is further furnished with upright Junipers.

All this, however, is but as it were the porch to the flower gardens, properly so-called. These occupy a sort of irregular plateau, reaching almost the entire distance from the gardens in question to the Marr Burn that skirts the bottom boundary. The chief space here is intersected by the main walks, one running east and west for 350 yards, the other north and south for 150 yards. They are 20 feet wide. The beds and scrolls are of great size, and most of them are surrounded with massive edgings either of stone or of shrubs and trees, such as common Yews, Portugal Laurel, hardy Heaths, Cotoneaster microphylla, common Oak, Beech, variegated Honeysuckles, Vincas, &c. These edgings are kept clipped to about 6 inches square. The centre is richly furnished with an eye of rich Palms, Echeveria metallica, Yuccas, Beet, &c.; around this balancing beds are formed with variegated Yuccas, Beet, Pelargoniums, &c. Here too are placed some noble marble vases, granite seats, &c., giving or receiving dignity and importance from the surrounding vegetation, of fine foliage plants, flowers, shrubs, trees, and masses of Rhododendrons and Roses. One of the most striking beds in the large geometrical garden near here consisted of the old Verbena venosa, which stands the rain well, and Viola Perpetual Yellow—the best and most brilliant bedding Violet or small Pansy I have seen. Tropæolum Cooperi was here again in great force and beauty, and looked rich and healthy everywhere. The beds in this garden are mostly large and massive. The flowers are flanked by groups of shrubs and noble trees in all directions, while the Laurel terraces rise nobly into shelving hills of green. Associated with the scene now being described is a noble hardy Heath bed, a common thing in Scotland, and I marvel greatly that it is not also so in England. All the year round some of the

Heaths are in flower, and for beauty of habit and usefulness for cutting no plants can equal Heaths. Everybody likes them, and in colour of flower, homely aspect, and durability they have few equals. To show the style in which beds are furnished here I would notice one, a Rose bed. It is 155 feet by 30 feet, and is planted pincushion fashion thus: The soil is cushioned or covered over with common China Roses; standards are then regularly distributed amongst and over these, and two or three Gladioluses are, as a rule, tied to the stems of the latter, the whole being as beautiful as it is novel.

I fear, from what has been said, the gardens will seem a thing of patches and disjointed parts. They are, however, the very reverse of this. The genius of order, design, and unity of expression runs through them all like a golden thread, binding all the parts into one great whole. Standing or sitting in the centre of the group of gardens just described, and looking towards the castle that crowns the whole, the crown hardly seems high and lofty enough for its position. That, however, is but a momentary impression. From our chief stand-point the terrace, with the castle at our back, shutting the doors of the north wind, and the gardens lying far down below at our feet, we have such a scene as is rarely met with. Each garden is distinct in itself, and yet links its hand into and helps, as it were, the next, and so on throughout the whole series, which is spread over about fifty acres of ground. One of the great negative charms is, no boundary line is visible. I presume there are rabbit fences, but they are not seen. In all directions the flowers, shrubs, and choice trees dissolve, as it were, into the far-reaching woodlands.

Crossing the Marr burn by a rustic bridge, we reach the gardener's cottage, which in site, size, and convenience is a model of what a gardener's house should be. It commands, from the windows, a full view of the kitchen garden, six acres within the walls, and almost as much outside. Passing down from this cottage and crossing the carriage road, another large flower garden in the mixed style is reached. This occupies a large space outside the garden walls. There is here a border 500 feet long and 12 feet wide, devoted to a rich collection of herbaceous plants, all correctly labelled. Roses, Phloxes, Stocks, Pentstemons, Hollyhocks, Annuals, Grasses, Everlastings, Zinnias, Asters, hardy and tender Succulents, and bedding plants of all kinds, are grown here by the thousand, and massed both for effect and for furnishing and for edgings when wanted elsewhere. Amongst the Succulents the following seemed to be favourites, viz., Sempervivum californicum, montanum, globiferum; Saxifraga rivularis, longifolia, hirta, pectinata, cristata; Sedum hispanicum, Fabaria (spectabile) immense quantities, rupestre, glaucum, sempervirens, and cordifolium majus. Tender Succulents may also be seen here in great variety, and on a border against the outer wall of the kitchen garden immense collections of Pentstemons and Phloxes are grown. The newer kinds of Clematis seemed wonderfully at home here—Jackmanii, violacea, and many others covering large spaces, and clambering over the summit of the lofty garden walls laden with flowers.

D. T. Fish.

The London Squares.—Permit me to suggest a very unpretending means of benefiting the poor at very trifling cost to the rich. I like to know that I am not singular in regretting that when this end of London is absolutely deserted at the close of the season, our Square-gardens should remain inaccessible to our neighbours, especially those who inhabit the narrow streets and crowded houses close by. I regret this, especially with reference to the children—many of whom may scarcely have seen the face of the country, and would be so much better and happier for even the smallest approach to it—so much safer than playing about on steps and curb-stones. I will anticipate objections on the score of abuse; though are we not beginning to find that the flowers in Hyde-park and Battersea Gardens may now bloom untouched? and as to lawns and gravel walks, should they suffer in the course of the autumn, this would but be an anticipation of the ravages of winter. I am aware how much has been done lately for the people in this direction, but we have not yet done enough. The recent noble grant of Ebury-square for garden ground is an immense boon, small as is the area, and unlike a garden yet; but its value will be immeasurably enhanced should it lead the way to other kindred privileges, as indicated.—*S. E.*

THE FLOWER GARDEN.

HARDY FOREIGN FERNS.

Onoclea sensibilis.—This is a grand plant for the out-door fernery. It has been in cultivation upwards of a hundred and fifty years, and yet how few know it. It is a deciduous Fern, producing broad, subpinnatifid, sterile fronds, the segments of which are entire at the margins and blunt at the points; they vary in height from about 1 to 2 feet, and their colour is bright pale green; the fertile fronds are about the same height, but differ wholly in every other respect. Instead of being very broad, they are much contracted, and instead of being subpinnatifid, they are bipinnate, having their segments rolled inwards, and thus forming, upon the upper portion of the frond, a berry-like spike. O. sensibilis is an extremely ornamental Fern, and one which is wholly distinct from any other in cultivation. It is a native of North America.

Onychium japonicum.—This elegant Japanese Fern is frequently grown in the greenhouse, and even in the stove. In most situations it is, however, perfectly hardy, but in severe winters some dead fronds of the common Brake may be thrown over it. The fronds are very finely divided, the segments being linear and of an intense dark green; the fronds vary from 1 to 2 feet in height, and are very useful for bouquet-making, or for placing loosely in vases with cut flowers.

Osmunda cinnamomea.—Osmundas belong to what are styled flowering Ferns, and this differs from most of the others, inasmuch as the fruiting fronds are wholly contracted, giving it a distinct and peculiar appearance. The barren or sterile fronds are bipinnate, slightly drooping, and glaucous green, the fertile ones are erect, and are produced from the centre of the plant. It is a deciduous kind, very widely distributed over the surface of the globe, having been found in both the East and West Indies, Mexico, and North America.

O. cinnamomea angustata.—This differs from the normal form in having rather more erect fronds, which are also narrower and smaller. It is a native of Canada.

O. interrupta.—This is a deciduous species, in which the fronds are bipinnate or twice divided, and vivid green, attaining a height of from 2 to 3 feet. When fertile, some two or three pairs of pinnæ in the centre of the frond become contracted and sporangiferous—a circumstance which has given rise to the specific name. This noble species is abundantly distributed throughout the United States and Canada.

O. gracilis.—This is also a native of Canada, and somewhat resembles a dwarf form of our native Royal Fern; the fronds are about 2 feet high; they have blunt oblong pinnæ, and bear upon the apex contracted sporangiferous segments.

O. spectabilis.—This is a slender form of our native species; its fronds are smaller than those of the Royal Ferns, and the young ones always come up reddish purple, which is its distinguishing feature. It is a native of North America.

Platyloma rotundifolium.—This is not everywhere hardy, but it is so distinct and handsome that it is worth a little extra trouble to include it amongst hardy kinds. The fronds are spreading, about 1½ foot long, pinnate, and the pinnæ, which are nearly round, are intensely dark green. It is a native of New Zealand.

Polypodium hexagonopterum.—This most elegant North American species bears fronds from 12 to 18 inches high, bipinnatifid, triangular in outline, and deep green. It is deciduous and a splendid object in the out-door fernery.

Pteris cretica albo-lineata.—This originally came to us from Java, but it is also found plentifully in Japan. I have found it to be perfectly hardy in the neighbourhood of London. It is a dwarf compact-growing plant, the fronds of which are pinnate, erect, with long bright green pinnæ, ornamented with a pure white band along the centre of each pinna. It is evergreen, and should be in every collection.

Pteris scaberula.—This is a dwarf, creeping, evergreen species, which no Fern grower should be without; the fronds are lanceolate, about 12 or 18 inches long, cut up into very fine and delicate segments of a bright light green colour. It is hardy in most places, but should receive a little protection during severe weather.

Struthiopteris germanica.—This species, which grows wild in Germany, attains a height of about 2 feet; its sterile fronds are pale green and pinnate, broad, and beautifully arched; the fertile ones are much narrower and erect. They all rise inside the barren ones, and form a beautiful crown, set off by the spreading green pinnæ of the others.

S. pennsylvanica.—This is by some considered to be a variety of the preceding, but as it is very distinct in aspect, it matters little whether it be a species or variety. In general outline it resembles

S. germanica, but it is more erect in habit, and grows much larger. It is a native of North America.

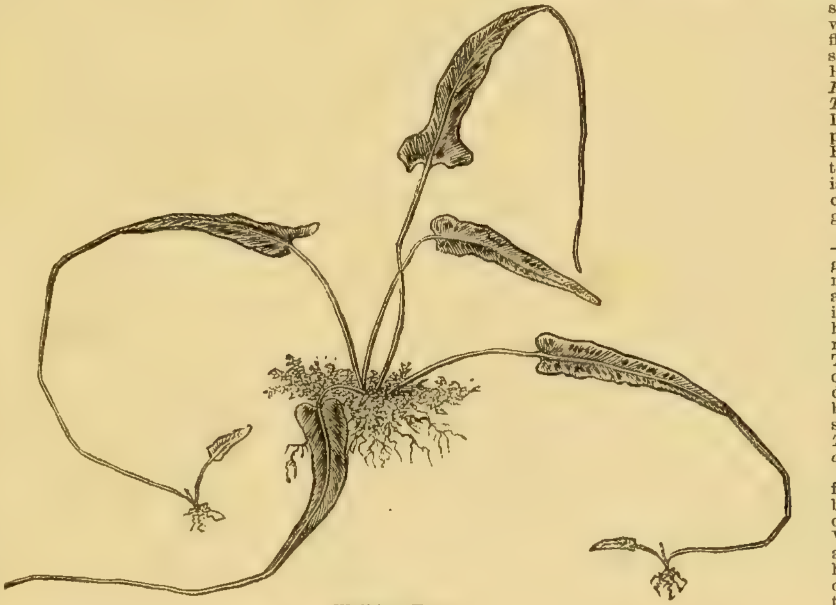
S. japonica.—This Japanese species is of somewhat recent introduction, and is apparently a dwarfer and more massive plant than either of the preceding; its barren fronds are pinnate, broad-spreading, and dark green; like its congeners it produces its fruiting fronds in the centre, and these are also much contracted.

Anchistea virginica.—This is a noble North American species, nearly related to Woodwardia; it forms an underground creeping stem, from which the fronds rise to the height of about 2 feet. They are broad, bipinnatifid, and pale green, ornamented with a peculiarly-arranged copious dark brown sori.

Lorinseria areolata.—This is nearly allied to the last-named plant, and, like it, is a native of North America. Its fronds arise from an underground rhizome, and seldom exceed 12 or 18 inches in height; they are sub-pinnate, with broad light green serrated pinnæ; the fertile ones are much contracted and erect. It succeeds best in moist situations.

Sitolobium punctilobulum.—This beautiful light and graceful plant produces fronds from 18 inches to 2 feet high; they are sub-tripinnate, the pinnæ being finely divided, and pale green, while the stipes are light brown. It is a charming plant for rock-work. It is a native of North America.

Camptosorus rhizophyllus (the Walking Fern). — Thi highly interesting little Fern well deserves a place in our hardy Ferneries. — *Villa Gardener*. [A good idea of the singular appearance of the Walking Fern may be gleaned from the accompanying illustration, and account of it which we subjoin.]



Walking Fern.

WALKING FERN.

This singular and interesting little Fern is found in rocky woods in North America. It grows in the almost soilless niches of rocks, or gets a foothold on their naked inequalities. It is quite rare, and during several years my searches in the woods were unrewarded with a sight of its odd little leaves, till one day, ascending a low mountain in a quiet, mossy slope of gray rock, far above my head, a company of these little "Walkers" was discovered. The frond is simple reticulate, veined in the midst, and forked only at the margin. It is undivided, lance-shaped, with heart-shaped lobes at the base, and the apex attenuated into a long, slender acumination, that oftens bends over backward and takes root, giving rise to a new plant. Thus, the Fern takes one step a year. I have never seen one that had stepped twice. The faint dots are variously shaped, and scattered without order on the transverse veins, slanting and at various angles, often in pairs and facing each other, looking something "like writing;" hence its Greek name—Antigramma rhizophylea of Presl. It can be cultivated in the same manner as other hardy Ferns, always taking care to give it a soil and atmosphere as near like that in which it grows naturally as possible, remembering it needs little light, much water, and to be let alone.—*American Agriculturist.*

[Mr. Backhouse, of York, informs us that he found this singular little Fern grow quite freely in narrow well-drained fissures of rock-work; but that as sure as there was a slug in the garden its young fronds would disappear.]

Variegation in Roses.—The following interesting communication of M. Du Breuil to the *Giardini*, an Italian Horticultural Journal, is worthy of some attention:—"In July 1867 I paid a visit to the garden of a judge at Bagnères-de-Bigorre. He showed me several standard Roses, and among them a Géant des Batailles, some of the dark red flowers of which were marked with numerous spots of a pale rose colour. I remarked the same peculiarity in varieties with paler flowers, such as General Jacqueminot. All were in a very fine condition of growth and presented all the other characteristics peculiar to the different varieties. Monsieur X. assured me that this variegation was permanent, and that it was capable of being perpetuated by budding. On inquiring what could have given rise to this singularity, he informed me that having been obliged, when budding a few years previously, for want of better, to use some buds which had no apparent eyes; these nevertheless sprouted and produced flowers, all of which exhibited the peculiarity described, and which he attributed to the imperfect conformation of the buds which he had employed. He then repeated the experiment with the same result, and he now produces this variegation at pleasure by operating in the manner described."

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Bidens atrosanguinea.—Your correspondent, Mr. Donald (p. 110), speaks of the beauty and usefulness of this plant, and he is right. He says the roots are very like those of a Dahlia. By some botanists this plant is classed with the Dahlias under the name of D. Zimapani. Let me advise Mr. Donald, by way of companionship to his favourite, to grow Dahlia glabrata with mauve or white, D. coccinea with scarlet, and D. Cervantesi with orange-red single flowers. If he does, I am sure he will be pleased.—H. Harpur Crewe, *The Rectory, Drayton-Beauchamp, Tring.* [Mr. Thompson, of Ipswich. states that it is properly, according to Sir J. W. Hooker, a Cosmos, and says that he sells it as such. It is also sold as Dahlia mexicana and Dahlia atrosanguinea!]

Œnothera marginata.—The plant which has been grown as Œnothera marginata for the last few years, and the beauty of which it is impossible to praise too highly, is not the true Œ. marginata, but Œ. eximia. The true Œ. marginata is only very recently introduced. It is also a very beautiful but quite distinct species.—H. Harpur Crewe, *The Rectory, Drayton-Beauchamp, Tring.*

Violets.—I had the good fortune last spring to stumble across two distinct forms of British Viola. One is Viola Riviniana alba, white as snow, the other is V. hirta rosea. I shall be curious to know whether these two forms reproduce themselves from seeds which I have sown, and expect shortly to see. Viola Riviniana alba I found at Riddlesdown, and of V. hirta rosea I found a small colony of five plants at Crome Hurst. I have other curious British Violas, but the two above mentioned are very distinct, and I have little doubt will come true from seeds.—W. Elliott, *Beechmont.*

Blue Hydrangeas.—M. J. Durousset, in a letter to the *Revue Horticole*, states that he knows from experience that the admixture of coal cinders with the soil in which Hydrangeas are grown is sufficient to cause the production of blue flowers on these plants.

Amarantus salicifolius in America.—With us during the past summer this has been all that was promised, and even more; the plants grew very rapidly, and attained a height of nearly eight feet, sometimes even ten. The habit of the plant is very graceful resembling that of a Weeping Willow, on which account it has obtained the name of "Willow-Leaved Amaranth." The colour of the leaves is a bronze green, which changes to a bright carmine, about the middle of August, on all the ends of the branches, making plumes of such dazzling beauty as to be truly magnificent.—Frank Romer, *Tarrytown, State of New York.*

Parochetus communis.—Having heard complaints from gardeners about losing this beautiful creeping plant, and wondering at the cause of its sudden disappearance, they may be interested to know that mice are its greatest enemies. I lately purchased a nice strong plant of it in bloom, and being about to make up a jardiniere for the boudoir, I thought how pretty it would look in it, with its elegant blue flowers hanging over the side; but imagine my disappointment upon reaching it from the stage to find that not a particle of the plant was to be seen. There was, however, every evidence, to my mortification, of the mice having regaled themselves upon it.—C. Coombs.

Hydrangea paniculata grandiflora.—This is a handsome shrubby plant, from 20 to over 30 inches high, introduced from Japan about the year 1864 by M. Siebold. The flowers, which are produced in a dense, handsome panicle, are at first white, and afterwards pass through various shades of rose-colour to a violet-red, changing at last to a greenish brown, so that their appearance varies from day to day. It is exceedingly ornamental, thrives in almost any soil or position, is quite hardy, and can be propagated with the greatest facility from cuttings.

THE FRUIT GARDEN.

HARDY FRUITS.

THE GOOD AND THE BAD.

We are about to point out the kinds of fruits that are best for cultivation; but, first of all, it must be understood that we have no intention of enumerating all the good ones, nor even all the best. We purpose to mention only a certain number of them which have a good flavour and reasonable size, are good bearers, and of comparatively easy culture; which may be relied on with perfect confidence, without fear of disappointment or regret, trustworthy subjects which we have ourselves proved; few in number, but sure, and giving perfect satisfaction in every stage of their cultivation. This selection is not so strict and exclusive as to condemn all others, some of which may, perhaps, be quite as good, but we must draw a line somewhere, and we shall endeavour to do so as discreetly as possible. We certainly grow good fruits, we even possess a great number of them. Horticultural societies, by means of their exhibitions and numerous fruit prizes, horticultural journals by their descriptions and announcements, do all they can to make them known; but still all this is done within the limits of a certain circle, and when improvements come, they come slowly. Who knows the good kinds of fruits? Nurserymen, pomologists, an amateur here and there, and that is all. They are met with in the gardens and on the tables of some favoured individuals, or, perchance, in the window of a restaurant. Elsewhere they are not to be had, and no doubt many persons of great wealth would be very much astonished if told that, in the midst of a luxury of which no detail appears to them to be wanting, there are, nevertheless, some princely enjoyments which escape them, and of which they never taste. It has been said that bad acquaintances are more easily made than good ones, and this applies in some degree to bad fruits also. The few favoured individuals, the connoisseurs of whom we have spoken, are not troubled by them, but the rest of the public, the townsman who buys in the market or in the street, the countryman who goes to his orchard for his dessert, the tradesman at his own house, the artizan in the workshop, or the boy at school, what good fruits are they acquainted with beyond five or six varieties? And yet we have good fruits. We cultivate the trees which produce them, we strive to make them known, as we are doing now. But then there are others which already occupy the place which these should have, there are fields full of large trees bearing fruit without name and without value, and people will not sacrifice these—first, because they would have to part with what they have; secondly, because they would have to buy what they have not; and, thirdly and chiefly, because they would have to wait. All this is very true in its way, and there, we confess, lies the difficulty. Nevertheless we must endeavour to gain our object, even though we have to struggle lustily for it, and pile admonition upon admonition, and pamphlet upon pamphlet—in a word we must make converts to our way of thinking.

We do not think that cultivators who for many a long year have lived side by side with their old and bad trees, are going all at once to root up these old companions of theirs, and replace them by the trees recommended. It is not from the growers that we must expect the first step in the path of progress, but from the consumers. When the purchaser knows that instead of bad or inferior fruits it will be possible for him to obtain for the same price others of excellent quality, he will ask for these. It is the demand which governs trade. Let a landowner cease growing this or that kind of tree and send an order for another kind. Soon the intelligent nurseryman sets about grafting a plentiful supply of the kind in request; the cultivator takes his fruit to market, those fruits that used to sell so well; but since he was there last the public taste has changed, no one will have them, and his cart returns as full as when it set out. This affords grounds for reflection; tastes change and we must follow them. And that is how, gradually and little by little, the culture of fruit trees will be modified amongst us; all depends on the public, on you, on us, on everybody; all we have to do is not to allow ourselves to be led by the seller, but to lead and direct him; it ought to be known that there are in cultivation a much greater number of fruits than are necessary to supply at almost all seasons an excellent dessert, and that if we do not, some day or other, see them on everybody's table, it is because our cultivators, from carelessness or ignorance, either do not wish or do not know how to do better.

General advice respecting each of the kinds of fruit which we shall consider—Pears, Apples, Peaches, Apricots, Plums, Cherries, Grapes, &c., down to Strawberries—an ample and conscientious selection of varieties, with the best mode of culture when that is necessary—all in the order of ripening, with the view of showing the resources of each month; some brief reflections, with which we shall commence, on the preparation of the ground, and the planting of the trees, is what we intend to give.

PREPARATION OF THE GROUND.

Whoever wishes to plant successfully must open his purse generously. There is a liberality which enriches, just as there is a parsimony which ruins. The preparation of the ground and the planting of the trees are the touch-stone of a judicious outlay. If, then, you wish to make a fruit garden, and to receive from it the greatest possible return, do not forget that the results will always be in direct proportion to the amount of well-expended outlay which you are willing to make upon it. Should a certain amount be beyond your means, do not go so far, that would simply be an act of folly; take your time, distribute your expenses over several years, do not plant all your ground at once, leave a part of it at rest, the half if necessary; it is better to have a small portion in a good condition than ever so large an extent in a bad one; this is the verdict of experience.

Trees are good feeders, and they must have good food, that is, manure. The colder and moister the soil is, the better must the quality of the manure be; and sheep and goats supply the best kind for warming the soil. Large towns do not always know what to do with the sweepings of their streets; these are just the thing for a cold, damp soil, and will afterwards return to them agreeably in the shape of good fruits for their markets and tables. If the land is warm, on the contrary, use cow-manure, which is cool and refreshing to such a soil. Moreover, all kinds of manure furnished by sheep, cows, horses, sweepings, &c., well mixed together, will suit any soil. Having provided the manure, the next thing is to put it in the ground, which, for this purpose, must be trenched up to a depth which will vary according to that of the stratum of good arable soil which covers it; this is usually from 2 to 3¼ feet. Let us suppose it to be 3¼ feet. The trench, which must be at least 7 feet wide, having been first marked out, we begin at one end, and there open a cut 2½ feet deep; the soil taken out is carried to the other end of the trench, where we shall want it by-and-by; we then break up the bottom of the cut to the depth of the spade, and place in it a layer of manure, and on that 10 inches deep of soil, then another layer of manure and another of soil, and a third layer of each, always 10 inches thick. We then proceed to the next cut and act in the same manner. It is needless to remark that, as we work going backwards, the soil which is behind us is that which is put on the top of the cuts in succession, so that when we come to the end of the trench, the soil which was carried there at the commencement of the operation serves to finish it. The work is then done, and we have a piece of ground well dug, well manured, and in perfect condition for planting. We cannot, unfortunately, always go so deep as 3¼ feet, because at that depth we often meet with clay or gravel, which are by no means good things for our fruit trees, and it will be best not to disturb them. If, then, we cannot go deeper than 2½ feet, we must reduce the depth of our layers of manure and soil to 8 inches, but in other respects act as before. But suppose we cannot go so deep as even 2½ feet. Well—we'll not talk of impossibilities; let us have two layers of soil and manure instead of three. There is, however, a way of remedying this last-named inconvenience, and one to which necessity may compel us to have recourse when the subsoil is bad, and also when the layer of arable soil is not even 2 feet deep; we then make use of an expedient. As there is no good soil below, we must put some above; if we have not got depth in one direction, we must create it, so to speak, in another, by carrying fresh soil and putting it on the top, and even if we do not in this way secure the respectable depth of 3¼ feet, we may at least obtain a depth sufficient to answer our purpose. The work is not to be done at all times and seasons; we must seize the happy moment when the soil is in suitable condition, and especially when it is not too wet. Sometimes the soil is very wet; this is unfortunate, for whatever is planted in it is sure to suffer; but there is a remedy for this also, in restoring the ground to a sound and wholesome condition. We of course assume that the ground is properly drained. Good drainage is a very important matter to persons living in a country like ours; indeed, it is found to be so in all countries. "Do not expect fruit in a frog-pond," said an American. Drain well, above all things, except your soil is perfectly drained naturally. F. Jamin.

FOOD VALUE OF FRUITS.

BY C. D. HUNTER, F.C.S.

Comparatively little attention has been devoted in this country to the chemistry of the fruits. So great is our ignorance on this subject that writers on food topics generally say as little about them as possible. And what they do say is generally a simple recast in their own phraseology of some ancient statements about the healthfulness and wateriness of fruits. In Germany, where chemistry has been long naturalised, and where numerous experimental agricultural statistics exist, aided by the Government, much has been done in the scientific examination of plants, &c. We, in consequence, owe to Germany much of our knowledge about agriculture and its kindred sciences. The authorities quoted in scientific works and lectures on these subjects are chiefly German. Liebig and Fresenius are familiar examples of this, but their names are legion in every department of science and art. The following table of the "composition of fruits" is condensed from a list of fifty-one analyses made by the celebrated chemist Fresenius, and reprinted in Johnson's "How Crops Grow," from the "Ann. Chem. u. Pharm." ci., p. 219. The original gives the result of each analysis separately, a minuteness of detail necessary in a purely scientific paper, but very inconvenient for general purposes. These have been averaged wherever the nature of the analysis permitted of so doing, but as in the original they are not all given in equal detail, several had to be omitted. The Riessling Grape, the first on the list, is an example of an analysis imperfect in detail, no determination having been made of the albumenoids, &c., and but for its position as first in the scale this analysis would have been omitted. The fruits are arranged in the table according to the percentage of soluble matter. This, other things being equal, is a fair measure of their comparative values for food. The percentage of water does not show this value so well because of the great difference between the fruits in the percentages of insoluble matters. This latter item consists chiefly of seeds and skins, with a small quantity of insoluble cellulose and pectose, the latter rarely amounting to one-fifth. The sugar in the first column includes both saccharose and fructose. The acid in the second column is expressed as hydrated malic acid.

COMPOSITION OF FRUITS.

Number of Analyses.	KINDS OF FRUIT.	SOLUBLE MATTERS.						Insoluble matters.	Water.
		Sugar.	Free Acid.	Albumenoids.	Pectine bodies, Gum & Organic Acids in Combination.	Soluble Ash ingredients.	Total soluble matters.		
2	Grapes, Riessling ...	14·33	·60	—	—	—	18·70	—	75·21
2	Apples, English Reinette	6·40	·62	·48	7·04	·29	14·83	3.13	82·04
2	Grapes, Austrian White	12·18	·91	·75	·36	·37	14·57	3·03	82·40
4	Cherries	10·29	·79	·94	1·83	·65	14·49	6·01	79·50
3	Greengages	3·32	.80	·36	9·18	·43	14·09	5·04	80·93
1	Mulberries, black ...	9·19	1·86	·39	2·03	·57	14·04	1·25	84·71
2	Prunes, sweet large ...	6·27	·90	·82	3·88	·62	12·49	5·89	81·62
1	Apples, white	7·58	1·04	·22	2·72	·44	12·00	2·96	85·04
2	Pears, sweet red ...	7·47	·04	·25	3·84	·28	11·88	4·63	83·49
2	Pears, large Holland	1·57	·67	·62	8·30	·67	11·83	7·40	80·77
2	Apricots, large ...	1·34	·84	·61	7·60	·78	11·17	5·34	83·48
6	Gooseberries	7·12	1·43	·42	1·18	·38	10·53	3·42	86·21
6	Currants	6·38	2·15	·50	·15	·59	9·77	5·42	84·81
1	Strawberries, Ananas	7·57	1·13	·36	·12	·48	9·67	2·86	87·47
1	Whortleberries ...	5·78	1·34	·79	·56	·86	9·33	13·12	77·55
2	Plums, blue and black	2·13	1·30	·45	4·08	·52	8·48	4·52	87·00
2	Raspberries, garden	4·20	1·23	·60	1·58	·43	8·05	4·58	87·37
1	Blackberries	4·41	1·19	·57	1·44	·41	8·00	5·59	86·41
1	Raspberries, wild ...	3·60	1·98	·55	1·11	·27	7·51	8·64	83·86
2	Strawberries, wild ...	3·90	1·49	·59	·10	·67	6·75	6·10	87·15

The above shows strikingly how inaccurate is the common notion about fruits. It also shows that the proportion of solids is much larger than it is generally stated to be in the brief and superficial sentences devoted to this subject in many works on food. The improvement in the nutritive value of fruits effected by cultivation is strikingly seen on comparing the composition of the garden Strawberries and Raspberries with that of the wild varieties. The increase of the soluble or easily digestible matters is very considerable, amounting in the case of the Strawberry to nearly fifty per cent. In the case of the Raspberry comparison is less easy, the garden specimens containing less solid matter; glancing, however, at the insoluble matters, it will be seen that these have diminished nearly one-half in the cultivated variety.

Judged by the old standard of the amounts of nitrogenous, albumenous, or so-called flesh-forming constituents, fruits occupy a very low position indeed. But this now disproved standard condemned also the meats and oily substances found by cattle feeders to be so superior for feeding purposes to any of the so-called flesh formers. Judged by the more rational view now entertained by our best chemists and physiologists, that the true measure of nutritive value is the force or potential energy of the substance, fruits occupy relatively a much higher position. In Dr. Frankland's Royal Institution lectures on the source of muscular power, he gives a table showing the actual energies developed by various foods when oxidised in the body. A sample of Apples containing the same proportion of solids as the Reinettes in the foregoing table bore the following relation to other foods, taking 1 lb. of Wheat flour as a standard.

	lbs.	ozs.		lbs.	ozs.		lbs.	ozs.
Flour	1	0	Ground rice ...	1	0½	Milk	6	1¾
Apples	5	15½	Hard boiled eggs	1	11	White of egg ...	6	10¾
Veal, lean ...	3	4½	Bread	1	12½	Carrots	7	6½
Beef, lean ...	2	11	Potatoes	3	12½	Cabbages ...	9	3¼

Grapes would probably stand about 5 lbs. 2 ozs., and the other fruits in proportion to their quantity of solid matters. It must always, however, be borne in mind that all comparisons of the nutritive value of foods are only reliable in so far as the foods compared are equally digestible. Of invalids it may be said that what is food to one is poison to another, and with them each case has a law to itself. With the ordinarily healthy the results are more uniform, but unfortunately we know more of the relative digestibility of foods for cattle than of those for men. Experiment has, however, shown that nearly one-half of our ordinary daily food escapes complete digestion and assimilation. In the light of this fact the fruits occupy a very favourable position, the great majority of them showing a very high proportion of soluble matters. This in the more common fruits ranges from two-thirds to five-sixths of the total solids, and must in comparison with many foods more than double their nutritive value. This also partly explains the value to invalids of such fruits as Grapes and Strawberries, both of which contain relatively but a small proportion of insoluble matters.

The term "anti-scorbutic drinks" shows in what high estimation fruits have always been held as health preserving agents. And now that more accurate analyses, and a better understanding of the nature and values of foods, show them also to be highly nutritious, it is evident that they should be used as foods. Fruits, from a false idea of their nature, have too frequently been used as drinks and taken at improper times. They have, in consequence, received a bad name, and apprehensive mothers warn their children against fruit; visions of diarrhœa, cholera, &c., being held up as bogies to enforce obedience; but let them give extract of beef or any other of the supposed concentrated nutritious flesh foods, and watch the result. They will not have long to wait before the same stomach ailments begin to show themselves, and that in forms more dangerous than ever followed the use of ripe fruit at equally unseasonable hours. Fruit should be used as part of a meal. With children and healthy adults, just before breakfast and dinner are the best times. Invalids will find it safer, especially with juicy fruits, to take it about the middle of the meal, other dishes preceding and succeeding it. This refers chiefly to uncooked fruit. When cooked and served hot, fruit may be safely taken at any period of the meal. Invalids will also generally find the more acid fruits less digestible, and especially so when preceded in the same meal by Potatoes. Fruits, especially when not quite ripe, are generally rendered more digestible by cooking. Stewing is the general, and a good method, but roasting is preferable. This may be done in an oven, or before an open fire. Apples tightly wrapped in paper are easily and pleasantly roasted before the parlour fire. Done in this manner they will generally be found to require little or no sugar, a decided advantage with invalids.

Unripe fruits should not be eaten, many of the acids found in the green fruits being poisonous. Unfortunately no analysis of green fruits is at present available. The following, however, shows the changes which takes place in a year from ripeness to mellowness, and finally to decay :—

PEARS.

	Ripe and Fresh.	Kept till Mellow.	Kept till Brown.
Resinous colouring matter...	0·08	0·01	0·04
Sugar	6·45	11·52	8·77
Gum	3·17	2·07	2·62
Lignine	3·80	2·19	1·85
Albumine	0·08	0·21	0·23
Malic Acid	0·11	0·08	0·61
Lime	0·03	0·04	—
Water	86·28	83·88	62·72
	100·00	100·00	76·84

It will be noticed that as the Pear mellows the sugar increases in amount chiefly at the expense of the gum and indigestible lignine. The rotting Pear again shows a decrease in all the more important constituents, the sugar has in part fermented, and gone off as carbonic acid and moisture, there being a loss in weight of about 23 per cent. A sour acid of decay has also been generated called metapectic acid, which is in the table incorrectly entered as malic acid. Much more of interest might be added, but enough has been said to show that the more accurate and extensive our knowledge of food and its properties becomes, the more highly will we value the fruits as healthful and nutritious foods.—*Dietetic Reformer.*

A REMARKABLE BATCH OF SEEDLING PEARS.

President Barry made an interesting report of the result of an experiment in growing seedling Pears in California, at the late meeting of the Western New York Horticultural Society held at Geneva. "In the month of November last, I received twenty-six varieties of seedling Pears raised by Mr. Bernard S. Fox of San José. Their appearance astonished me. Many of them were so much like some of our old well-known sorts that I half suspected my friend Fox of playing a joke on me. There were Bloodgood, Seckel, Lawrence, Winter Nelis, Beurré Clairgeau, Beurré Bosc, Easter Beurré, Duchesse d'Angoulême, Beurré Superfin, Glou Morceau, and others. Some friends, very good judges, to whom I sent specimens, had the same doubt in regard to their being seedlings. When I began to examine them closely and cut them, I found they were distinct from the sorts they resembled, and were positively new. I then wrote to Mr. Fox for some account of their origin, and he answered that they all sprung from the seed of the Belle Lucrative, sown in 1863, and had fruited in the rows where they had first grown. Some bore the fifth year, and in the sixth over 200 bore fruit. One-fourth of the trees have not yet fruited, and for five years to come new fruit may be expected. Many of these varieties are fully equal in size and beauty to our best Pears, and many have the advantage of being quite late. Generally speaking, they are deficient in vinous flavour, like the Easter Beurré and others of that class. Only one or two were vinous; but some were justly entitled to rank among our best kinds. A few of the largest appeared to be of inferior quality; one specimen of these, resembling Nouveau Poiteau in 1871, weighed two and a half pounds. This is, beyond doubt, the most remarkable instance of success in raising seedling Pears on record. And the fact that all are from seed of Belle Lucrative, and none like that variety, but like all the others growing around, is both curious and interesting, showing that the mother plant did not affect the character of the varieties. This might not have been the case had some other varieties supplied the seed. Much of this success is, no doubt, due to the peculiar climate of California. The early age at which these trees began to bear, even in the seed-bed, seems strange." N. Y.

The Jardin des Plantes Collection of Fruit Trees.—In his last work, M. Decaisne cites the instructions under which the collection of fruit-trees in the Paris *Jardin des Plantes* was constituted. The professor of culture was charged with its management, and was directed to bring together all the known varieties, with all their names, "afin d'établir une uniformité de nomenclature nécessaire pour toutes les parties de la République." This is a decree of the National Convention, June 10, 1793. The collection which Decaisne has so diligently and acutely studied actually dates from the year 1792, when the fruit-garden of the Chartreux of Paris was broken up, and two trees of each variety transported to the *Jardin des Plantes*. In 1793 it contained 185 varieties. In 1824, when Thouin died, there were in it 265 varieties of Pears alone; it has now more than 1,400 varieties of this fruit. It is interesting and important to know that the collection still preserves the greater portion of the very types described a century ago by Duhamel.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

"Sweet" Apples.—Will any of your readers kindly inform me what the American papers mean by "Sweet" Apples, which they seem to distinguish as a peculiar class. Also if they are known in this country, and what are the best kinds?—W. R. V.

Moss on Fruit Trees.—The *American Horticulturist* says, nothing is better for removing this than carbolic soap and lye. Make common lye of wood ashes, not strong, and add half a pound of carbolic soap to a three-gallon pail of boiling lye. Apply hot with a swab to old trees. It has been used with entire success on Apple, Pear, Peach, and Cherry trees, destroying every particle of moss it touches.

Imported Grapes.—The best source of supply at present is Almeria, in Spain, where the white hard-fleshed Grape now visible at every fruiterer's is grown. It is much easier transported than one would infer from its delicate appearance and perishable nature. Buried in sawdust it can stand a seven days' voyage with very little risk. The principal difficulty is to obtain the sawdust clean enough. Almeria itself cannot furnish sufficient to pack the thousands of 50 lb. barrels which are shipped weekly. Very often a cargo has to be sent out from England, and cork sawdust, which is reputed in the trade to be the best preservative, has to be brought from even greater distances. Hamburgh Black Grapes are imported in a similar way, but are much less popular than the Almerias.

A Fruit Farm.—A correspondent of the American *Rural Home*, who has visited the farm of Mr. T. G. Yeomans, of Walworth, Wayne county, says that Mr. Y. has 14,000 fruit trees in bearing, 4,000 of these being Duchesse d'Angoulême Pears, and sixty acres being occupied by Baldwin Apples. The trees of the latter he describes as having "straight, smooth, healthy looking bodies, about 1 foot in diameter, and all branching to about 6 feet from the ground." The Duchesse Pear trees are beautiful and productive, and free from disease. In all, Mr. Yeomans has about 400 acres of land, the larger part of it being devoted to the nursery business.

THE ARBORETUM.

TREES OF THE ROCKY MOUNTAINS.

"Why, there ain't no Rocky Mountains. I've just come across the whole of the United States territory, from San Francisco to New York, right through by the Pacific Railway, and I tell you, Sir, that there ain't no Rocky Mountains—no way you can fix it. There's the coast range, and the Nevada Mountains; them air some mountains, but for Rocky Mountains I calculate they don't exist." Such was the answer we received a few weeks ago to an enquiry which we put to a new arrival from the other side, and the answer was, so far as the point to which the speaker's knowledge extended, perfectly true. For days the railway seems to be speeding along on a dead level as it approaches the line of the Rocky Mountains, and the slope is so gradual that it is only when we are told that we are descending the other side that our expectations of magnificent scenery, lofty peaks, and tremendous passes are banished from our mind, and we recognise the fact that at the point where the railway crosses the Rocky Mountains the summit is reached by a very gradual slope on each side. For a long space on each side it is apparently one continuous and boundless prairie, traversed from time to time by rivers. At this season of the year it is swept by the keenest and most merciless winds, laden with drift and snow, defying all the efforts of American ingenuity to prevent the railway passengers being chilled to the bone in the cars. How great the contrast at other seasons! In autumn, the deliciously mild and at the same time exhilarating air, charged with the aromatic odours of the Artemisias and what is almost an Alpine herbage, is described as so enjoyable that the passenger sits inhaling it from morning to night, unwearied by the sameness of the scenery, and feeling mere existence in such a climate to be in itself happiness.

Very different is the aspect of the Rocky Mountains in other parts of the range. There we find lofy peaks, precipitous ravines, and pathless forests. Such is the scene depicted in the accompanying woodcut, taken from a region further to the south than that to which we have just alluded. Different kinds of trees in different localities give a different stamp to the character of the scene. Near the summit will be found Pinus flexilis (a kind of Cembra) transformed from a tree into a sprawling shrub no higher than a yard above the ground, from inability to face the blast; but with old and gnarled branches crawling along the ground and matted so thickly that a man can almost walk over its top. With much the same habit, occurs in similar localities, the botanically curious Pinus aristata, also a five-leaved Pine, but with the leaves so short, thick, blunt, and curled up as to look more like the foliage of Abies nobilis.

Further down, clothing the slopes, will be found the widespread Douglas Fir, which is, no doubt, the tree which clothes the slopes represented in the accompanying woodcut; botanically the same as the Douglas Fir of Vancouver's Island, British Columbia, and California, but so different in aspect and quality that the practical man is apt to think that the botanist must be mistaken, and that after all there must be two species of Douglas Fir. From Vancouver's Island all along the Pacific slope down to Santa Barbara and Los Angelos, the Douglas Fir is met with, of that magnificent stature and possessing that unmatched timber that have made its name so famous. Stems of 200 or even of 300 feet high are the ordinary dimensions of the finer specimens; and wherever it occurs along that coast the timber is straight, elastic, tough, and without knots, so as to fit it admirably for masts and similar purposes. In the Rocky Mountains again, the Douglas Fir runs straight down far into Mexico; but it has lost its lofty character, 60 or 70 feet being its ordinary altitude, and 90 feet an extreme height. Its timber, too, instead of being tough and elastic, readily warps, and has ceased to be tenacious. The bracts of the scales of the cones of this Rocky Mountain and Mexican race seem also, as a whole, more projecting than in the coast kind. How far north this race extends in the Rocky Mountains, and whether its range unites with that of the coast in the north, we do not know, but there

TREE VEGETATION OF THE ROCKY MOUNTAINS.

is certainly an interruption at the plains through which the railway passes.

Further south, as the Rocky Mountains pass into the mother range (Sierra Madre) of the Mexican Mountains, other species of Pine and Fir vary the scenery. Nature has there been good to the aborigines who inhabited these lands before the advent of the white man. Including those of California, she supplied eight or nine different kinds of Pines with edible seeds, viz., Pinus flexilis above mentioned, P. edulis, P. monophylla, P. Sabiniana, and P. Coulteri, and the Sugar Pine, not to speak of the larger forms of Pseudo-strobus in Mexico, P. Ayacahuite, &c.

On the deciduous forest scenery of the Rocky Mountains our space will not allow us to enter. It may be sufficient to remind our readers that Oaks, Walnuts (or Hickory, as they are called in America), Chestnuts (Buckeyes), Poplars (Cotton-wood), &c., combine, with many others, to vary the charms of the wild scenery. A wide field lies open, too, for the explorer and botanical collector. For a country that has now been so much traversed, it is surprising how much that is new is discovered by every fresh visit of a scientific man, a fact which in itself shows that much more still remains to be discovered. A. M.

TREES WANTED IN THE BROAD THOROUGHFARES OF WESTERN LONDON.

The beautifying and softening effect of trees in connection with architecture is beginning to be freely admitted in theory; but the aversion to change which so strongly characterises the average British mind is by no means ready to put the theory in practice. For instance, a proposal to plant an avenue of trees along the Edgware Road from the Marble Arch to Maida Hill would, there can be little doubt, be strongly objected to, as an unnecessary and inexcusable innovation, by a very powerful, influential, and respectable section of the public. It cannot be urged that the thoroughfare is not sufficiently wide for the purpose; or, denied that a fine avenue of trees would make it a promenade almost as attractive as the Boulevard des Italiens by the time that the trees attained a tolerable size, and the present mean houses had given place to buildings of a higher class, as they are already in process of doing; yet the change would be stubbornly resisted as long as possible on half a score of more or less plausibly sounding pretexts.

The call for trees along the Thames Embankment was long addressed to official ears in vain; the stone-deafness of the British official is indeed almost supernatural when "unheard-of" novelties are talked of; and the plantation of an avenue of trees in the centre of London no doubt appeared so preposterous when first suggested, that officialism, which is not in the habit of going out of its way to redress grievances, was perhaps justified in remaining deafly undisturbed in its undeviating equanimity till the call became too loud to be disregarded. When at last the official ear was opened, and the call no longer seemed to it so very absurd, it was determined, after a good deal of careful hesitation, to carry it into effect; but doing so was a much easier matter than planting Edgware Road would be. The embankment was altogether a novelty, one that had been long staunchly opposed; but being at last done, was found not to be so mischievous an innovation as the great and powerful party of jogtrots had prophesied. And so, being a novelty, and a still uncompleted novelty, the unwonted introduction of an avenue of trees in a London thoroughfare was taken to by the public as part and parcel of a novelty which had not turned out by long odds so badly as was expected. Had the embankment remained unplanted for twenty years, the opposition to its plantation with an avenue of Oriental Planes would have been most obstinate, and might very possibly have triumphed.

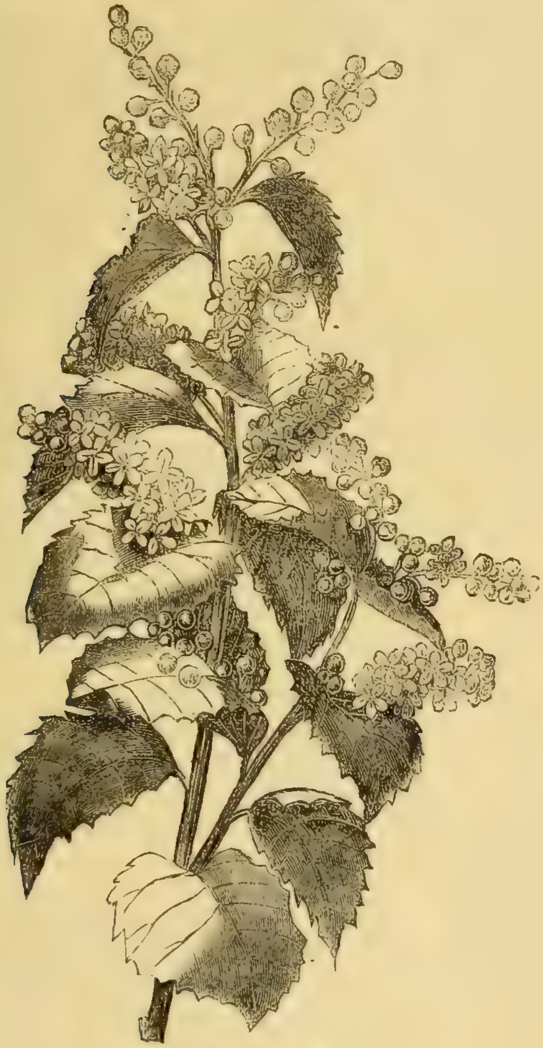
One of the objections I have heard recently urged against the planting of trees in London is, that even if desirable, it would be useless to attempt it, inasmuch as they would not grow. Not on account of the smoke—that is an enemy to vegetation which it has been found that Oriental Planes and several other trees defy. No; it is a new difficulty, and one that has curiously enough been put forward during the present exceptionally wet season, namely, an absolute want of moisture. The main drainage and recent sewerage works of London have, it is suggested, so greatly exhausted the water-bearing strata of the Metropolis as to have a most injurious effect upon all kinds of vegetation within its circuit, and has already caused the gradual drying up of many of the ancient and celebrated wells of London. *This* objection to tree planting in London appears on the very face of it fanciful in the extreme, and should, at all events, be tested before being accepted as a *fait accompli*.

Whatever may be urged against such an "innovation" as planting trees in existing thoroughfares, even when sufficiently wide, none can be put forward against providing for noble avenues of trees in many of the great new roadways now forming in the suburbs. The greed of landowners and of lease-holding builders might surely curb itself a little, and, by giving another fifteen or twenty feet to the new roadways, provide ample space for the planting of avenues of trees of various kinds, as almost any kind would flourish freely in the comparatively open villa neighbourhoods. What charming suburbs we might have to this vast Babylon of bricks and mortar if this suggestion were attended to! Surrounding the mighty core of smoke-blackened brick, one might expect within a moderate period of time, to realise (climate allowed for) an embowered and leafy city such as the Marquis de Beauvoir, in his recent travels, describes Batavia to be—green and flowery throughout, with exuberant and beautiful vegetation. Nevertheless, such hopes may be utterly vain—there are so many opposing views and interests; those of the landowners, the builders, the district surveyors, and a large number of prejudiced people, who, having no love of trees, ignorantly deem their presence unhealthy. When Loudon built his house in Porchester Terrace, Bayswater, he planted a Sumach at the edge of the pathway, opposite to his residence; but the unusual proceeding met with extremely prompt and triumphal opposition. The district surveyor complained of its being likely to shade the pathway, and keep it damp, and the neighbours declared that it would be very unpleasant to pass under the drip of its leaves in showery weather, and so the Sumach had to be rooted out, and its magnificent foliage was not allowed to gladden the eyes of poor Loudon from his dining-room window, as he had looked forward to. It is gratifying to find, however, that other places are not so conservative as London in the matter of opposing the plantation of street and roadway trees; and that Brighton has recently taken the lead in the opposite direction, in a very decided manner, as briefly notified in a recent number of THE GARDEN. Trees were, in fact, much wanted to improve the somewhat blank and bare appearance of that magnificent watering place, though some opponents aver that they preferred Brighton as it was, especially late in the autumn, because there were no trees to look wretched as they lost their leaves. In spite of this view of the matter, two lines of fine young trees have just been planted on the outer skirts of the central pavement of the Steyne; and it is intended to plant two other lines inside the adjoining enclosures, to run parallel with those on the outside, so as to form an avenue from Castle Square to St. James's Street. It is perhaps doubtful whether trees will flourish on the Steyne itself, which is entirely open to the sea, and exposed to all the violence of the south-west gales. But that those in the streets, which are protected by the Cliff houses, will do well there can be little doubt, and they will supply to Brighton a feature that in a picturesque point of view was badly wanted; its excessive bareness of any kind of foliage being remarked as a disagreeable characteristic by a very numerous class of visitors. The *Builder*, in referring to the planting of these trees in Brighton, observes that, in all probability, the eastern road will be planted in like manner from the College to Kemp Town. It is to be hoped that in some of the broad thoroughfares of western London, this planting of street trees may ere long be imitated, for it is truly surprising that so little has been done in that way, and that obstructive opposition has been up to the present time so successful. H. N. H.

Measuring the Heights of Trees.—In his tale of "Monsieur Violet," Captain Marryatt tells us, as an instance of the great aptitude for applying simple rules possessed by the Shoshone Indians, that when they desired to measure the height of a tree at any time when its shadow was cast on the ground, they used to place a stick of a given length into the ground, and then calculating the difference between the length of its shadow and its actual height, and applying the same to the shadow of the tree, they ascertained its correct height, thus unknowingly working out a sum in the rule of three. Any person, however ill-informed, might easily get at the exact height of a tree when the sun shines, or during bright moonlight, by marking two lines on the ground 3 feet apart, and then placing in the ground on the line nearest to the sun a stick that shall stand exactly 3 feet out of the soil. When the end of the shadow of the stick exactly touches the farther line then also the shadow of the tree will be exactly in length the same measurement as its height. Of course in such a case the sun will be at an exact angle of 45°. Measurements of this character could be best effected in the summer, when the sun is powerful, has reached to a good height in the heavens, and when the trees are clothed with living green so as to cast a dense shadow. To many to whom this idea might not have occurred, it might be made annually a matter of interest, thus on warm summer days to take the height of prominent trees, and so to compare notes of growth from year to year.—A. D.

THE HOLLY-LEAVED CHERRY.

WHILE botanising some years ago upon the Pacific coast, we saw what at a little distance appeared to be a fine clump of Holly. A closer inspection showed that it was a Cherry, with leaves so exactly like those of the Holly that the name given it by Nuttall, Cerasus (now Prunus) ilicifolius, the Holly-leaved Cherry, is well bestowed. The plants we met with were directly upon the shore of San Diego Bay, and were not more than six feet high. Farther inland, upon the hill-sides, within the mountain range, it becomes a small tree of twelve or twenty feet in height. The bark is gray and roughish, and the wood close-grained, tough, and somewhat reddish in colour. The engraving from the *American Agriculturist* shows a twig with the leaves and flowers of the natural size. The leaves are thick, smooth, and evergreen, like those of the Holly, and armed with very sharp teeth. The flowers, like those of our common wild Cherry, are in racemes, and are succeeded by a handsome deep-red fruit, which gives the deep-green evergreen a most brilliant aspect in autumn. There is another evergreen Cherry in the Southern States, Prunus Caroliniana, which is absurdly enough called "Wild Orange," and both belong to the same section of the genus as the Cherry Laurel of Europe. The Holly-leaved Cherry seems to be confined to the southern portion of California, but would probably grow in most portions of that State, and would doubtless serve for ornamental hedges and all other uses to which Holly is put. We brought home some seeds from California, which vegetated, and we should like to know if the plant has ever been tried out of doors in the south of England, and with what result.



Holly-leaved Cherry.

OLD TREES AT FULHAM PALACE.

MR. WILLIAMS (p. 94) seems surprised at finding an Ailantus in the form of a timber tree. The Ailantus is said by Paxton to have been introduced into England in the year 1751. The oldest tree of it with which I am acquainted is that in the grounds of the Bishop of London, at Fulham Palace. This Ailantus measures upwards of 50 feet in height and 6 feet in circumference around the stem. It was probably planted by Bishop Compton, whose name is associated with a Cork tree planted in the year 1666, also with a Judas tree (Cercis siliquastrum), evergreen Oaks, and a noble tree of the black Hickory, all of which are still standing. Associated with them may also be seen a magnificent specimen of the Gleditschia horrida, the spines of which are some 9 inches long. Bishop Tait's memorial tree is a Wellingtonia, which was planted in the year 1858. The grounds at Fulham Palace are richly stocked with fine old trees. The late Sir William Hooker, who often used to pay them a visit, informed me that they once contained the oldest Liquidambar in Britain, but, like other relics of the past, this no longer exists there. When gardener there, I often used for bouquets the flowers of a fine old Pomegranate, which used to flower profusely on the last year's wood. It grew against the south-west front of the palace. This plant was thought to have been nearly 200 years old. It was killed down to the ground in 1838, on what has been termed Murphy's frost; but it started afresh, and covered a large space of the palace facing the river Thames. Mr. Hayes, gardener to Bishop Bloomfield, used to grow some fine tall scarlet Geraniums, say 10 and 12 feet high, and place them on the lawn during summer in triangular fashion, a plan which I continued, and in autumn they used to be the admiration of all who saw them, in consequence of their immense size of truss and profuseness of blossom. I used to plunge the pots in the soil and turf them over close to the stems. I dare say the present gardener, Mr. Henderson, still preserves the style of thus treating these scarlets, which, intermixed among deciduous and evergreen trees, have a fine effect. D. CUNNINGHAM.

Moor Park.

Medicinal Properties of the Bay-tree.—Recommending the leaves of the Bay-tree (Laurus nobilis) as an unfailing remedy in cases of fever and ague, M. A. Dorain makes the following communication to the Académie:—"I have the honour to acquaint the Académie with the properties of the Bay-tree as a febrifuge and anti-periodic. Mode of preparation: I dry the green leaves over a gentle fire, in a coffee-pot (closely covered, in order to avoid the loss of volatile matters) until they have become brittle, but without allowing them to undergo any further change. I then pound and reduce them to a very fine powder. Mode of administration: I macerate 15 grains of this powder for 10 or 12 hours in a glass of cold water. Two hours before the anticipated time of the attack, I administer to the patient both the liquor and the powder. No abnormal result follows; most frequently the attack does not recur after the use of the first packet. I repeat this medicine three times a day, and for eight days I adopt no other treatment, nor any special regimen. Results: I have not had a single failure in cases of daily or tertian fever, even in those which were not affected by sulphate of quinine. I am convinced that if my remedy were applied in the same way in cases of quartan fevers, it would be equally efficacious.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Poisoning by Privet-berries.—Not long since, one of our medical journals recorded a case in which two children, who had eaten some Privet-berries, were seized with coma, vomiting, and convulsions to such a degree that had not remedial measures been promptly employed they would undoubtedly have lost their lives.—M.

Thuja gigantea and Libocedrus decurrens.—How is it that Mr. Murray, when alluding to these Conifers (page 116), did not point out that the seed of Libocedrus decurrens is, compared with that of Thuja gigantea, quite large, say six or eight, or perhaps ten times as bulky as that of gigantea?—W. T.

Illustrated Works on Coniferæ.—Can you recommend me a good illustrated cheap book on Coniferæ? The "Pinetum," by Gordon, though good, is not illustrated, so it would not serve my purpose.—WILLIAM JONES, *Egham*. [There is no moderately-priced work on the subject with plates. Lambert's great work and Lawson's "Pinetum Britannicum" being costly. The latter, too, is only in progress, and the former does not contain the newer species.—A. M.]

Briar-root Pipes.—A short paragraph in a recent number of THE GARDEN states that the wood of which these pipes is made is the root of a species of Smilax found growing throughout the southern States of America. From enquiries I made some time ago when Briar-root pipes were first introduced, and from an examination of the wood, and comparison of it with that of the tree Heath (Erica arborea), I believe them to be identical, I am, moreover, strengthened in this supposition from the similarity of the French word for Heath, Bruyère, with the common name Briar, which is probably a corruption of the former. I am told by a large importer and maker of these pipes that the wood comes only from the south of France.—JOHN R. JACKSON, A.L.S., *Royal Garden, Kew.*

PUBLIC GARDENS.

NEW PLEASURE GROUNDS IN NORTH WALES.

ONLY a few months since the mountain pleasure ground of Bangor was described in THE GARDEN, and already another inclosure of far vaster dimensions is spoken of as being in prospect in a neighbouring part of the Principality. The grandest headland of North Wales, the mountain cliff known as the Great Ormes-head is, it seems, to become a vast pleasure ground, and a carriage drive is to be constructed to the summit, at a cost of £11,500. The scheme appears a promising one, and it is only to be regretted that it is not the munificent gift of some great local landowner; instead of which it is the speculative undertaking of a Company Limited, which will necessarily have to levy the usual black mail in the shape of toll upon the seekers of pleasure on the Great Ormes-head, who formerly, without let or hindrance, sought health and vigour as well as pleasure by the simple and best of all tonics, the mountain breezes of the noble height which looks down upon that pleasantest of Welsh watering places, Llandudno.

That the dues may be light, we may easily conceive—even very light, as otherwise the number of visitors might be too small to realise a sufficient return, in the shape of interest, to the Company, as compensation for its outlay. That any toll or admission money, however small in amount, should have to be charged, is to be regretted; but as the visitors to Llandudno generally arrive with tolerably fat purses, it may be said that the cost of slight tolls will be literally of no importance to them. Still, when a choice morsel of our island realm, a spot which from occasional associations of the pleasantest kind has become dear to thousands of people, it is certainly regrettable that steps should be taken which may possibly render it necessary at some not very distant period to repurchase that big breezy playground of our autumnal holiday makers at a vast cost, as has been the case with Hampstead Heath. The principle of English manorial "rights," is a "fearful and mysterious thing," which sometimes works itself out in curiously uninteresting ways. Let us imagine, for instance, that the Great Ormes-head, with all its wild Thyme, all its pretty Club Mosses, all its verdure, in short, and all its picturesque outcrops of naked rock, are in a certain way the property, after a specially English fashion, of some great manorial lord. One may see at a glance that the said manorial lord would never attempt any fencing in, and would make no sort of outlay upon a mountain mass which contains no mineral wealth, and the surface of which is as nearly as possible valueless for pasturage; and so long as he did not, that noble mountain height would have remained open to the free footsteps of whoever might wish to enjoy the keen, pure air, and witness the glorious sunsets across the ocean, which form such a gorgeous spectacle from that commanding height.

But let us suppose that after making a grand road to the summit, and establishing pleasure gardens, conservatories, and pavilions, the speculation should not be found to "pay"—that the undertaking should, in short, prove itself a commercial failure—what then? Why the "Company Limited," wise in its generation, would not throw good money after bad, but might simply abandon the undertaking, and the Great Ormes-head, with its grand road to the summit, would revert to the mysterious lord of the manor, who never fails to appear when anything is to be got, but has the habit of remaining an invisible myth when any outlay has to be made. The next thing would be the prompt action of the steward, bailiff, or agent of the holder of those potential rights—who would advertise the frontages of the said grand road to be let on building leases, and by degrees a street of marine villas might creep up to the top, and the territorial potentates' rent-roll would be increased by £10,000 to £20,000 a year, and our sea-coast visiting population would have lost their dear old Great Ormes-head for ever. But for the present let us look at the brighter side of the question; let us suppose that the "Company Limited" have made such terms with the mysterious owner or owners of the mountain air as would prevent such results as those hinted at, and that failing their own success as a company, they have taken measures to secure to the public an advantageous position in the matter. Such being one of the possibilities of the case, it surely would become necessary that some kind of public supervision should govern the manner and taste of the laying out of the gardens and pleasure grounds on the summit of this favourite public resort.

Primrose Hill and Hampstead Heath have been quite recently saved from desecration by the timely interference of Government; but the grounds round about and within the walls of Rochester Castle have been as recently disfigured and reduced to the aspect of a surburban tea garden, in a manner to be deeply and lastingly deplored. It would, therefore, be to the advantage of the Ormes-head Company to submit their plans in great detail to the criticism of the public and the press; for the judicious treatment of such a magnificent site is of the highest importance, not only to the public, but also to the company. Upon the broad and skilful treatment of the pathways, plantations, and buildings, in such a manner that, while adding richness and variety to the bare green summit of the great bluff, the boldness and simplicity of natural effects shall not be lost, depends the entire success of the laying out, and its attractiveness as a pleasure ground. The so-called utilization of the Great Ormes-head, in the way projected, will require to be conducted in that truest of artistic methods in landscape gardening, by which the presence of art is concealed; and on such a scale, and in such a position, the task will be one requiring the highest obtainable skill. There are men, two, three, four, half-a-dozen, perhaps, in the whole country capable of carrying through such a task successfully; and there are, on the other hand, hundreds always ready to rush in and make havoc, where genius fears to tread.

There is a glorious little region of bold mountain scenery in the Bavarian Tyrol, that of Bechtisgaten and the Konigs-see, which, under royal auspices, has been manipulated, so to speak, by such artistic skill, as to make precipices, rocks, and ravines, available to the summer rambles of all, without the necessity of their being expert climbers; and this "mending of nature" has been so carefully and so tastefully done that one cannot but admire with what cunning craft an air of natural and unshorn wildness has been preserved while rendering the finest and most rugged spots as accessible as the chief features of a private garden. This is the kind of art that should be employed at the Great Ormes-head, where the plantations must not, of all things, be spotty and mean. Large masses of mountain Pines and other suitable trees should be planted in such fashion as we see them in the great Swiss valley of the Tète Noire, where, and in other parts of the Alps, grand lessons in the art of imitating the aspects of mountain forests might be learnt. In the more sheltered parts, and in suitable aspects, Rhododendron ferrugineum and other mountain shrubs might be introduced, and in others, small herbaceous plants of the hardiest Alpine kinds might be so established as to appear to be a natural growth, while our native Brooms and Furzes, with their rich golden blossoms, should not be forgotten. All this should, however, be done with the utmost skill, and by one of the very best of our horticultural artists, especially by one who has already had experience in simulating wild scenery upon a large scale. It will be very easy to spoil the Ormes-head instead of improving it; and great care should be taken that such a desecration does not take place. H. N. H.

THE PROPAGATOR.

THE ART OF GRAFTING.

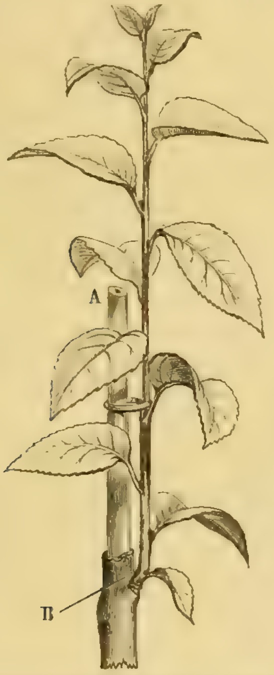
(*Continued from p.* 471, *Vol. II.*)

PROPER SEASON FOR SHIELD-BUDDING.

SHIELD-BUDDING is possible whenever the sap of the stock is flowing, but two distinct periods are most suitable for this operation: 1. In spring, when the sap begins to flow, and when the immediate growth of the graft is desired. This is grafting with a pushing bud. 2. In the course of the summer, and when the graft is not required to sprout until the following spring. This is grafting with a dormant bud. The second method is by far the best, and, moreover, most commonly adopted.

SHIELD-BUDDING WITH A PUSHING BUD.—This mode should be practised at the commencement of the year's growth, so that the graft may be able to develop itself sufficiently, and to ripen its wood before winter. By this method the cultivator hastens the multiplication of rare kinds of plants. By it he obtains at once suitable specimens for market, and these will also supply him in the course of the summer with scion-branches for the late grafting with dormant buds. The method, however, should not be abused by too late grafting, as the forced growth which results from it may seriously affect the stock which has been thus grafted. The scion's branches are cut from the parent tree some time before the flow of the sap; they are then buried at the north side of a wall their entire length in a trench 3 or 4 inches under the surface. When the state of the sap in the stock is such as to allow the bark to be easily detached, the scions are taken up, and their buds shield-grafted by the ordinary methods. As the leaves will have fallen off, the absence of a footstalk will render the handling of the buds less easy in detaching them. The Rose tree, which is readily grafted in this way, furnishes very early in the season young scion-branches, which should be prepared, stripped of their leaves, and used at once as we have before indicated. Let us again repeat that shield-budding with a pushing bud should not be deferred to a late period; too many gardeners and amateurs err in this respect with their Roses. The Peach tree succeeds better with this method than with winter branch-grafting; but it does still better when shield-budded with a dormant bud. As we shall see presently, the stock, when grafted with a pushing bud, is to be gradually headed down, commencing to do so a week after grafting, in order to promote the growth of the scion.

Shield-budding with a Dormant Bud.—A bud is termed dormant which does not sprout before the spring which follows the time of its insertion. The months of June, July, August, and September are the proper times for inoculating a dormant bud. The exact moment for operating depends on the state of the sap in the stock. The older stocks, whose growth ceases early, should be grafted first; after them the young and vigorous ones. Bearing this distinction in mind, tall standards should be grafted before low ones; a stock of the current year's growth later than one of former years; the Plum tree and the Wild Cherry earlier than the Sainte-Lucie and the Almond tree; the Pear on its own roots and the Hawthorn sooner than the Quince and the Apple. Maples and Ash trees later than Chestnuts and Lilacs. If it is apprehended that the sap of the stock will cease to flow before the scions are sufficiently ripened, the tops of the latter should be pinched a fortnight beforehand, in order to accelerate their ripening, and the nearer the time of grafting the shorter are they to be pinched. However, if pinched too short and too soon, the latent eyes of the scions will shoot and branch before the time of ripening, and the scions will consequently be useless. On the other hand, the vegetative powers of the stock may be prolonged by the aid of waterings and stirring the soil around the roots. Thus retarded in the one subject and accelerated in the other, the sap at last comes into something like a condition of harmony or equality in both stock and scion. Stirring up the soil around the roots a few days before grafting tends to promote the activity of the sap; repeating the operation the day after will serve to maintain the growth and favour the union of the graft. It would not be prudent to bud when the sap is too abundant, as it would smother the bud. Failure need not be feared if the operator waits till the sap has lost somewhat of its activity, when the bark no longer detaches itself freely from the wood, and the mornings become cool. In shield-budding, from the middle of August to the middle of September, kinds which vegetate to a late period of the season, care must be taken to assist the union of the graft by tying the branches of the stock together at the time of grafting. As soon as the grafting is completed, the ends of these branches are cut off for one-third of their length; the flow of the sap will thereby be arrested, and the union of the graft will be the result. Subjects of a luxuriant habit of growth should be treated in this manner. Two or three weeks after budding, the subjects should be gone over, and, where the buds have missed, the stocks should be rebudded. The failures are easily recognised by their black or wrinkled bark. But, as the sap has by this time almost ceased to flow, the lost currents of it, so to speak, must be sought at the neck of the lateral branch, or on the stem under the base of a vigorous branch. Certain kinds of Roses succeed best with this late budding.



The young scion tied up to the stump or heel of the stock.

TREATMENT AFTER BUDDING.

Those stocks which are rich in sap when budded late should have the ends of the branches lopped or clipped if they are in a shady position, or if the mass of their leafy branches prevents a free circulation of air around the graft. If this were done with vigorous stocks, budded earlier, there would be danger of causing them to shoot prematurely, and in their case it will be sufficient to tie their branches together, or to bend the budded branches and fasten them to the stem of the stock. Grafts that are too tightly bandaged must be relieved by cutting or untying the bandage. If the union of the graft is not complete the bandages should be renewed or the old one retained after being loosened. It is better to wait until the winter is over before removing the bandages from grafts that are likely to suffer from the cold. Those stocks that have suffered from tightening of the bandages should have some of their largest top branches shortened with the sécateur or the pruning-knife. The heading-down of stocks budded with a pushing bud should be commenced a week after budding, and the branches should be cut away successively, and also the stem to about 4 inches above the graft as soon as the union of the parts is ascertained. In the case of subjects budded with a dormant bud, the stock is to be amputated as soon as the frosts are over, and before vegetation has commenced, by a single cutting about 4 inches above the graft. This stump of 4 inches serves for tying up the young graft, and is to be cut away at the end of the summer following (at the place indicated by the line B), first operating on those subjects which are slow to heal, and those stocks which differ most in kind from their grafts. In this work the saw, the ordinary pruning-knife, and the stump cutter are used. Stakes or props should be continued for a few years.—*C. Baltet.*

(To be continued.)

Fertilization of Cyclamens.—I would feel greatly obliged by a little information as regards the fertilization of Cyclamens, as I have some good varieties.—W. Bealby. [Choose a fine sunny day in the last fortnight of this month or the first one of March for the operation. Let the male plant be of vigorous constitution, with large finely-variegated leaves, and having a good shaped corolla, the segments of which should be long, broad, blunt at the ends, each having a slight but regular twist. In selecting the female be more particular than with the male, and in all cases use only flowers of pure and unspotted colour. Take hold of the stalk of the male flower between the forefinger and thumb of the left hand, immediately underneath the flower, and with the right-hand thumb, tip the flower, and the pollen will fall out, and lodge on the thumb-nail of the left hand. Having previously selected the female plants, apply the pollen to the stigmas of four or six of the finest flowers, and be careful in the operation, for rough and injudicious handling often results in failure. Remove all the other flowers from the plants whose flowers have been fertilized, and place the plants in a rather shaded portion of the greenhouse or pit.]

Influence of the Stock.—M. Decaisne regards as wholly unproved all the assertions that fruit is ameliorated or in any degree altered by being grafted upon a Quince or any other stock. We think he is wrong.

Varieties of Roses Produced by Budding.—M. Zen has contributed to the Royal Institution of Venice a paper in which he declares that, after long study and experiment, he has succeeded in producing new varieties of Roses by budding. The budding was effected in the usual way; but it appears that when the flowers were produced they were very different in form, colour, and markings from the parent stock; that these variations became intensified with age, according to the vigour of the plant; that the variation is persistent, and may be reproduced by layering, grafting, or budding; that if the variation be lost it may be reproduced by repeating the original experiment under like conditions; that the results of experiments differ in the case of different Roses. M. Zen intends to communicate his plan to the Institute.

CLIMATE AND VEGETATION.

BY ALEXANDER BUCHAN, M.A.

(*Continued from p.* 118.)

I. NORTH AMERICA, WEST OF THE ROCKY MOUNTAINS.

The regions from Vancouver's Island northward, and Lower California, have climates widely differing from each other. The former of these regions is characterised by an abundance of moisture at all seasons, and the latter by a deficiency of moisture also at all seasons. In New Archangel, Queen Charlotte Islands, and the continent adjoining, the prevailing winds are westerly, with a considerable proportion of southerly and easterly winds in winter, and north-westerly winds in summer; hence the rainy character of all the months. Since, however, the easterly winds, which also frequently blow in winter, come from the continent, are very cold, they serve the important end of effectually checking growth, and thus affording to vegetation that rest which seems to be essential to the existence of many species. Over the whole of this region luxuriant forests abound. On the other hand, in Lower California westerly winds are much less frequent in winter, and those which do occur, do not blow with the force and persistency which they acquire further to the north, and dry easterly winds from the continent are much more frequent. At San Diego the annual rainfall is only 8·8 inches, and in none of the cold months does it reach an average of 2 inches. In summer, winds are westerly and north-westerly, and observations show that they do not come over a large portion of the Pacific; and since at this season temperatures very rapidly increase inland, Lower California is almost a rainless region, only a tenth of an inch of rain falling at San Diego during the three summer months. Over the whole of this region there are no forests, but only a few scattered stunted trees and shrubs. The region between these two partakes partly of the character of each. From November to the middle of April there is a generous, if not an abundant, supply of rain, owing to the prevalence of strong westerly winds from the Pacific; whereas little if any rain falls, particularly during the five months from May to September. This is the general character of the climate over this region in places which are open to the Pacific, situated either near the coast, or on the higher slopes inland which are not shut in to westward by ground still higher than themselves. But vast tracts are enclosed between the different chains of mountains running north and south through this part of America, over which the winds, already drained of their moisture, pass arid and dry, and consequently rain scarcely falls there. From the relation of this part of America to the prevailing winds, and from the contour of its surface, an endless diversity of climate is the result, and especially the middle portion of the vast region extending from Aliaska to Lower California presents more sudden transitions of climate, and climates more sharply contrasted with each other, than any other portion of the globe can parallel. Hence this region offers the best field for the study of the geographical distribution of species, in so far as they are, or may have been, determined by climatic conditions.

II. NORTH AMERICA, EAST OF THE ROCKY MOUNTAINS.

The forest zone of the United States, comprising the slopes of the Alleghanies and their continuations northward, the northern slope of the Ohio basin, and the lower plains of the Mississippi on the west, enjoys one of the best climates on the globe. As a consequence of its relation to the Gulf of Mexico, the prevailing winds, and the general path storms take in crossing it, it follows that the winter rainfall increases generally in advancing from the Rocky Mountains eastward over the States; over the whole of the Alleghanies it amounts to from 2 to 4 inches a month, excepting the low ground at the mouth of the Mississippi, where the fall is greater. In summer, since the prevailing winds are a portion of a vast aerial current which has swept through the West Indies into the Gulf of Mexico, and thence changed from an E. and S.W. into a S. and S.W. course, the supply of rain is ample; and further, since the temperature rises to northward and north-westward, and falls only very slowly to north-eastward, the rainfall is not excessive, being generally from 3 to 5 inches each month. One marked feature in the rainfall at all seasons over this region is the remarkable uniformity of its distribution, arising chiefly from the circumstances that the range on the Alleghanies lies in a N.E. direction. Since, then, this range does not lie across the path of the moisture-bringing winds, but along their course, either side is equally well watered. It would be difficult to name any other country affording climatic conditions better adapted for the growth of trees, and for the great staple products of agriculture. The eastern part of the prairie region, comprising fully a half of the whole of it, appears to be as favourably situated, so far as the rainfall is concerned, as the greater part of the forest region of the Alleghanies. The rainfall during the winter months is a little less, but fully equal in amount to that of the east side of Great Britain in the same season. In the summer months the rainfall of the eastern portion of the prairies equals that east of the Mississippi; but in the months of April, May, and June, it is greater. Hence the opinion that the treeless character of the prairies is due to a deficiency of the rainfall is incorrect. All observations show this; it is only in the upper reaches of the prairies where a decided deficiency of rain is felt. In the lower prairie grounds the average results show no deficiency; droughts doubtless occur, but not more so than in Australia and many other countries.

III. BASIN OF THE MEDITERRANEAN.

The peculiarity of this region lies in its summer rainfall, which depends on the direction of the prevailing winds and on the high temperature of the land as compared with the sea at this season. These winds are originally part of the great westerly current of the Atlantic, which, on approaching the Peninsula and the south of France, assume a northerly direction and blow southwards on Africa. The result is that the south of Spain, the north of Africa, and the shores of the Levant have no rain in summer; and little rain falls in Spain, the southern half of Italy, Turkey, and Greece, and nearly the whole of Asia Minor. The mountains which environ this basin and break it up into parts have important bearings on the climate through the rainfall at all seasons; and hence the great variety of its climates, not violently contrasted, but yet well marked, which cannot but exercise a great influence on the distribution of species.

IV. REGION OF THE CASPIAN SEA AND CAUCASUS MOUNTAINS.

Here there are extraordinary contrasts of climates at all seasons. The region sloping down to the eastern part of the Black Sea is well watered by rain in each month of the year, and the same remark applies to the country sloping down to the south-western portion of the Caspian, particularly in the winter, spring, and autumn months.

In the north of the Black Sea the prevailing winds in winter are easterly, but in the eastern portion of the Black Sea they are N.W.; hence the difference in the rainfall of the two regions. In the same season the winds on the Caspian are E. and N.E., and, consequently, the vapour which rises from the Caspian is borne forward to the south-west angle, and being arrested by the Elbury mountains, falls in copious rains. At Leucoran 51 inches of rainfall in the year, and an average of from 4 to 8 each month, from September to May, and the result is a rich tropical vegetation. Nearly the whole of the rest of the region surrounding the Caspian is an arid waste; at Astrakan 4½ inches only, and at Novo Petrovsk 5½ inches, fall in the year. In summer the prevailing winds over Europe and western Asia are W. and N.W. Hence in the extreme east of the Crimea the soil is parched and bare, but across the Straits of Enikali and a little to the south, rains are frequent and the vegetation luxuriant. In the low plains of the Kuban the rainfall is scanty, but on the higher grounds sloping up to the Caucasus, against which the N.W. winds strike, the rainfall is abundant; thus at Alaju, 2,070 ft. high, from May to September the average is about 6 inches each month. With this sudden increase to the rainfall there is a total change of climate and vegetation. This part of the globe comes next to California and neighbouring states for the immense variety of sharply-defined climates which it presents, and perhaps excels it for the number of the climates which may be considered as localised within very contracted limits. Hence it presents an excellent field for the study of the distribution of species in relation to climate.

V. NORTHERN INDIA.

Over this region little rain, if any at all, falls during the cold months of the year. But on the southern slopes of the higher ranges a good deal of rain falls, and snow at still greater heights. Thus at Nynee Tal, 6,433 feet high, the average rainfall of December, January, and February, is 4½ inches a month. Thus, in this respect, height brings about an important change of climate; and since all less elevated districts to the north of such ranges of hills are rainless, the varieties of climate, and the transitions of climate, often sudden and abrupt, are very great.

In summer the distribution of the rainfall is very remarkable. In the west of India, south of Kutch, the S.W. monsoon prevails, and since these winds come laden with the moisture they have licked up from the Indian Ocean, in a passage extending over from 30° to 40° of latitude, or between 3,000 and 4,000 miles, the rainfall along the whole of the west slope from sea level upward is excessive. But, north of Kutch, the prevailing wind changes to W.S.W., W., W.N.W., and finally N.W.; and since a W.S.W. wind traverses a comparatively narrow breadth of sea, and W. and N.W. winds become land winds, the rainfall from Kutch northwards diminishes with extraordinary rapidity; and, along the Indus, and particularly to west of it, no rain falls, the country is parched up, and the temperature rises as high as it probably does anywhere on the globe. While this occurs on the plains, it is otherwise on the southern slopes of the mountain ranges, such as those of Cabul, which overlook them. On these slopes frequent showers brought by the southerly winds fall, and there, accordingly, the climate and vegetation assume a totally different character. On the other hand, at Calcutta the prevailing wind in summer is S. or rather S.S.E., and a steady aërial current blows up the valley of the Ganges. Since such a current coming, originally over fully 3,000 miles of ocean, incessantly pours vast volumes of vapour into the Gangetic basin, the rainfall of this valley in summer is very great, and continues very large even to the head of the valley. But cross this valley westward into that of the Indus, the rainfall quickly, if not at once, sinks to little or nothing, and we encounter nothing but a waste tract of sand. Here, then, is a region which offers, in the splendid contrast of its climates (from the almost rainless district of Spiti to the maximum of humidity in Khasya), a tempting field to the student of nature in tracing out the influence of the variations of climate on organic forms and on their distribution; and it has an advantage the Caucasian and Californian regions do not possess, in the facility with which a staff of naturalists could be organised for an exploration of it, more or less exhaustive.

In the Introductory Essay to the "Flora Indica" of Hooker and Thomson (p. 36) there occurs the following sentence:—"The geographical distribution of plants, which is in very many respects the most interesting branch of botany, has made very little real progress of late years, owing to the confused state of systematic botany; for we do not consider rudely cataloguing the ill-defined species of limited areas, or loosely defining geographical regions, by the supposed prevalence of certain natural orders or forms of vegetation, as calculated to advance directly the philosophy of distribution, however useful such regions are to the beginner, or such catalogues to the systematist." No doubt very much has been done of late years with reference to this most attractive subject, not merely in the accumulation of facts of the highest value, but more particularly by such inquirers as E. Forbes and Wallace, in seeking to connect the present species of organised beings and their distribution with those of past time. Notwithstanding this, the sentence quoted from the "Flora Indica," is, in a large sense, still substantially true. The state of systematic botany, and the loosely defined geographical regions of plants, seriously obstruct the prosecution of the inquiry in such a way as might conduce to the discovery of the laws of distribution. Thus, if we wish to investigate the climatic conditions either necessary for the full development of a species, or sufficient to set the bounding limit to its distribution where are we to find the facts of its distribution defined with an approach to the preciseness which the problem demands? And be it here noted, the progress of meteorological research is showing us more and more clearly, that even such comparatively small countries as Scotland afford very much greater contrasts of climate than were supposed, as respects those vital elements of climate, moisture and sun-heat. Watson's "Cybele Britannica" is a wonderful store-house of facts regarding the distribution of the British "Flora;" but even in this work the limits of distribution are not precisely enough defined. For it must be kept in view, that the climatic influences determining this distribution which it is sought to trace will often prove to be of a very subtle character, and the horizontal and vertical limits of distribution will require to be very accurately stated. If this were done, the causes which arrest the spread of a species might be inquired into at different points along its limiting line, from which some satisfactory conclusion might be arrived at as to whether there were conditions of temperature or moisture, of soil and of geological formation, or of the inroads of any of the plants' natural enemies, whose attacks it could not withstand in the struggle for existence. Since, then, we cannot hope to obtain this information in any single work which covers so extensive a field as the "Cybele Britannica," we must turn to the quarter to which Sir Walter Elliot drew attention in the opening address last year, viz., Local Natural History Societies, whose chief and proper province ought to be, as it certainly is, to collect and disseminate such information. Towards this end, I would suggest that these societies should be invited, from time to time, to prepare monographs of the distribution of a few naturally allied species within their own limited districts; and that these monographs be illustrated with physical charts of the district, on which the boundary lines of each species would be set down,—not by a general blur or dash of colour indicating its existence over a district, but by marking off the localities where it has been formed by clearly defined lines, in the same way in which isothermal, isobaric, and magnetic lines are drawn, or in which the facts of geology are depicted. If these societies possessed a plate of the physical features of their district, the expense of these illustrations would not be great. Such, however, is the paramount importance of the information thus collected and discussed by local societies, as concerns the lasting and solid progress of botany, zoology, geology, and the allied branches of physical research, that the expense of publishing such monographs and illustrations, and of liberally disseminating them among scientific men, ought to be defrayed by such bodies as the Royal Societies of London, Edinburgh, and Dublin, who should be entrusted with funds supplied to them for this purpose by the Government, as suggested by Mr. M. Home in his opening address to the Royal Society of Edinburgh in December 1870.

Again, if desirous of inquiring into the effects of climate in effecting changes in a greater or less degree on vegetable forms, we set about to collect the facts of the distribution of these forms,—such as the varieties of species, the species of any particular genus, or other allied groups,—a great difficulty soon faces us, arising out of the confused state of botanical catalogues. And this state of things is conspicuously apparent in the case of those very plants we naturally select, viz; those whose instability of form (if the expression be allowed) and intimate natural alliances mark out as peculiarly suited for the investigation. It need scarcely be remarked that this is a field wherein much heavy work is required of botanists,—heavy work, demanding at the same time extensive knowledge and well disciplined systematising powers. This branch of botany can be reformed and placed on a satistactory basis only by a series of monographs of genera, in which each genus and its species are exhaustively dealt with. We might then hope to arrive at some definite and truly scientific knowledge of the laws determining the distribution of plants;—how, for example, a change of a few degrees of tenperature affects the distribution; a greater or less rainfall; different distributions of temperature and rain, at certain critical epochs; and how the occurrence of a certain degree of cold in winter, on the one hand, effectually brings about the destruction of some species, and on the other secures the preservation of other species by affording them the annual rest they require.—*Transactions Roy. Botanical Society, Edinburgh.*

The Wettest Spot in Europe.—Mr. Isaac Fletcher, M.P. for Cockermouth, who has for several years kept rain gauges at various stations among the Cumberland mountains, has published in the *Carlisle Journal* the records of each month during the year 1872. His gauge at Seathwaite, at the head of Borrowdale, has been established for nearly 30 years, and the returns of the past year show that in the lake district, the rainfall of 1872 has not been exceeded in any year during that period. The following figures show the total rainfall at each station during the whole year, the numbers in parentheses indicating the height in feet above the mean level of the sea:—Scawfell Pike (3,200), 90·75 in.; Great End (2,982), 91·40 in.; Brant Rigg (695), 118·68 in.; Esk House (2,550), 121·27 in.; Wastdale Head (247), 131·30 in.; Sprinkling Tarn (1,986), 170·33 in.; Styhead Tarn (1,472), 177·04 in.; Seathwaite (422), 186·25 in.; Taylor's Gill (1,070), 224·73 in.: the Stye (1,077), 224·73 in. The number of wet days at Seathwaite during the year (the only place where this record of wet days seems to have been made) was 228. Mr. Fletcher remarks:—"The amount registered on the Stye—nearly 244 in.—is marvellous, and is greatly in excess of any previous record. In 1866, 224·56 in. were recorded. So far as has yet been ascertained the Stye is the wettest spot in Europe, and, except in tropical countries, the quantities I have quoted represent the two greatest annual falls of rain that have ever been recorded."

Root and other Parasites.—The following parasitical plants are now fully established at Glasnevin:—1. Orobanche Hedera, growing on Ivy, propagated by bringing roots of Ivy which were infested with the parasite, and grafting them on roots of Ivy which were growing in the garden. 2. Orobanche minor, growing on the roots of Trifolium medium, propagated by sowing the seeds of the parasite along with the seeds of the Clover. 3. Lathræa squamaria, growing on the roots of several kinds of trees, propagated by digging up tufts of the plant, and planting it among the roots of trees growing in the garden. Of Cuscutas we have had six different species growing in one season, but they are not permanent, and require for the most part to be kept up by sowing their seeds annually, and assisting them to attach themselves to the supporting plants on which they prefer to grow. We have made several attempts to establish the yellow Bird's-nest, Monotropa hypopitys, and also the common Bird's-nest Orchid, Neottia nidus-avis, but hitherto without success. The latter lived and flowered a second year after it was brought into the garden, which gives some hope of success by further perseverance.—D. Moore, *Glasnevin.*

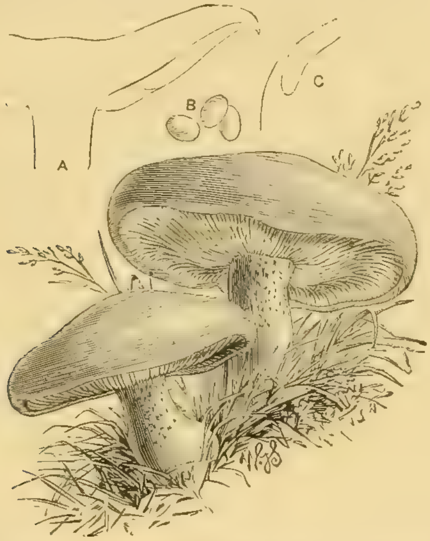
New Fibre Plant.—A fibrous plant, called Apocynum venetum, has been discovered growing wild in such quantities in Turkistan that it may be expected soon to make its appearance in the market. Its fibres, as tender and delicate as Flax, as strong and tenacious as Hemp, are, by combining the qualities of the two, greatly superior to either. The Russians will probably endeavour to transplant it to Europe, an attempt which might be made by other countries as well.—*Times.*

THE HOUSEHOLD.

LILAC-STEMMED MUSHROOM.

AGARICUS (TRICHOLOMA) PERSONATUS.

This is one of the commonest and best of all British agarics, and there is little fear of mistaking it, when its salient characters are once known. It grows everywhere abundantly in pastures and grassy places, generally late in the autumn, and appears sometimes in immense quantities after heavy rains; at these times its flesh becomes saturated with moisture, and unfit for the table. It is said to have been sold at one time in our markets under the name of "Blewits," but of late years it has never appeared. In colour it is throughout very pale brown, almost white, or pallid buff, with the exception of the upper part of stem, which is usually tinted with a pale but lively purple shade, hence its popular name of "Blewits," or Blueits. The pileus is smooth, or greasy and bibulous, the stem solid, ringless, and slightly scaly at the purple apex; the gills have a tendency to separate from the stem, as shown at C; hence Fries, the great Swedish botanist, some time since removed the plant to the Lepista section of Paxillus, under the name of Paxillus personatus, whilst Cooke, in his new handbook, following a suggestion of Mr. Worthington Smith, elevates Lepista to a genus (on account of its white spores, as contrasted with the red spores of Paxillus) and describes our plant under the name of Lepista personata.



Agaricus (Tricholoma) personatus (Lilac-stemmed Mushroom); meadows and grassy places, generally late in autumn; colour, pale brown, almost white, top of stem pale purple; diameter, 7 inches or more; height, 4 or 5 inches. A. Section; B. Spores enlarged 700 diameters.

A. personatus is closely allied to A. gambosus, and the recipes for cooking the latter exactly apply to the former, but care should be taken to gather the specimens in dry weather, and when not soddened with moisture.

The best mode of cooking Agaricus personatus is either to mince or fricassee it with any sort of meat, or in a *vol-au-vent*, the flavour of which it greatly improves; or simply prepared with salt, pepper, and a small piece of bacon, lard, or butter, to prevent burning, it constitutes of itself an excellent dish.

Served with white sauce, it is a capital appendage to roast veal. It may be broiled, stewed, or baked.

Breakfast Agaric.—Place some fresh-made toast, nicely divided, on a dish, and put the agarics upon it; pepper, salt, and put a small piece of butter on each; then pour on each one a tea-spoonful of milk or cream, and add a single clove to the whole dish. Place a bell-glass, or inverted basin, over the whole; bake twenty minutes, and serve up without removing the glass until it comes to the table, so as to preserve the heat and the aroma, which, on lifting the cover, will be diffused through the room. It dries very readily when divided into pieces, and retains most of its excellence. A few pieces added to soups, gravies, or made-dishes, give a delicious flavour.

GARDEN STRUCTURES.

THE FUTURE OF HOTHOUSE HEATING.

The present famine price of fuel is not an unmixed evil, for if it teaches nothing else it will compel thousands of the unthinking to realise the fact that wanton waste makes woeful want. At this season the luxury of a good fire is a forbidden comfort to tens of thousands, and yet whether examined socially or commercially, the great fact cannot be ignored that one-half, if not two-thirds, of the fuel consumed in Great Britain and in her commerce is wasted. What is the smoke nuisance that converts our manufacturing towns into dungeons but fuel unconsumed? And yet the consumption of smoke is in a nutshell if we only go the right way about it. But smoke, like coal, will not burn without fire, and when a fire is properly lighted the consumption of smoke is a simple matter. What we want to make our firemen understand is the fact that smoke is waste—so much money daily sent up the chimney; at present nine-tenths of those who have the management of fires merely regard smoke as a natural consequence of combustion. While this state of ignorance prevails not only in the garden, but upon the "rail," the mill, the manufactory, the domestic household, in fact, everywhere where fuel is consumed, we must not be surprised if fuel remains at a famine price. In our domestic arrangements open fire-places, as at present constructed, are a costly but necessary nuisance. It is, however, pleasing to find that the Society of Arts has taken the matter in hand, with the offer of handsome prizes, for improved fire-places, and if inventors only handle the subject aright good results must follow.

The great error, so far, in all attempts to extract a maximum effect from a minimum cause has been that of forcing highly heated and perhaps arid air into the atmosphere to be heated, without previously diluting it with fresh air, and if necessary moistening it. When, nearly thirty years ago, the "Polmaise" fever was at its height, this fact was apparent, but then hot-water pipe was cheap. Strikes and extortion had not increased it fifty per cent. in a few months, so that then a large surface moderately heated could be indulged in. Now, concentration is the order of the day, so much so that if the present price of iron continues, water will cease to be the carrier of heat to our plant-houses, and steam or warmed air philosophically applied will take its place. The saving in the first "plant" will be enormous, while the extraction and utilisation of fire from fuel will be reduced to a certainty. All that is necessary for the purpose is an affiliation of sound practice to sound philosophy; the gardener must either call the man of science to his aid or philosophy must court the confidence of practice. That this forecast is not a dream I feel fully convinced. The circumstances of the times demand the change and culminate it must. I throw out the hint, and would advise those who are bothering their brains about intricate boilers, to hark back a little, take a second thought, and see if heat cannot be extracted from fuel and be conveyed where it may be required in a much more simple and natural manner than by means of water as a carrier.

Given a heat generator and a reservoir filled with hot air, cooled, aerated, and moistened to the proper state for admission among tender vegetation, how shall we carry it where it is wanted, and distribute it according to the exigencies of cultivation? That is the problem which requires solving, and those who are acquainted with the working of steam "blowers" and "fans," as used in smelting and foundry cupolas, should not be slow in devising the means of distribution, and in small "plant" of substituting self-acting power for steam power. The latter would only be wanted where a number of houses required to be heated from the same source, and then if it is air in motion that is wanted, why anything, from the soft sighing of a May morning to an African sirocco may be commanded. Neither need we grumble about the cost—a steam-engine may be bought nearly for the cost of a first-class boiler, while every atom of heat generated could be utilised in the reservoirs. Although all this may appear to be a wild, chimerical dream, this is not the first time that the subject has haunted me. For thirty years and more, it has from time to time been cropping up, but never with sufficient weight to force its adoption. Now, the price of material speaks loudly enough, and the price of fuel says reduce the waste, or the pleasure of glass houses must become, as it was half a century ago, a luxury in which the wealthy only can indulge.

But it is not from a gardening point of view only that this subject demands investigation, for once establish a reservoir of heated air, with the power of filtering—medicating if necessary, and delivering it where and when you like, and the difficulty of heating and airing blocks of buildings at once vanishes; for there is no more reason why the fresh air which is forced into the Houses of Parliament or other public buildings should not be drawn from healthy hills miles away in the country, than that fresh water should come from the valleys in the same locality. From a health-invigorating point of view, pure air and pure water are twin elements, and, therefore, if in dense centres of population one element is worth carrying, why not the other? Town life would thus be shorn of one-half of its terrors, and frequenters of crowded assemblies, instead of being compelled to inhale over and over again impure air, might fancy themselves miles in the country. Such things may not come to pass in our time; but they will come—the times demand them, and come they must. The domestic aspect of this subject is greater even than the commercial, for though it may take some time to wean a Briton from the ancient extravagance of an open fire, the time must come, if our coal sighters are correct, when dire necessity will compel him to consider his sensual rather than his visual faculties. Without, however, running to the extreme of close stoves, there is ample scope in our open grates to extract three times the quantity of heat that we at present get from them without any increase of fuel, but before that is accomplished we must have a complete metamorphosis in the construction of our fire-places, and the waste up the chimney must be controlled. William P. Ayres.

Patent Terra Cotta Stoves.—Now that winter has fairly set in, it may not be out of place to direct attention to these ingenious contrivances for heating purposes. The boiler of our early vinery failed the other day, and we had recourse to one of these stoves to supply its place until another boiler could be got. It was fitted up in a temporary manner, and the heat which it gave off astonished everybody, although the amount of fuel consumed was small. With one filling, the fire was kept going for the space of 46 hours, the only attention it had during the whole of that time being to check the draught, when the proper heat had been obtained. Charcoal would doubtless be a better fuel for it than coal, but the makers affirm, that by using their smokeless patent fuel the expense may be reduced to 2d per day. The apparatus being portable, too, is a point in its favour.—C. Abney, *Hatfield House.*

Heating by Paraffin Lamps.—The paragraph in page 102 was well timed. I have a good-sized conservatory at the back of the house in which I live, which contains several half-hardy succulents and other things, and such plants as Dielytra spectabilis, &c. Hitherto I have entirely kept the frost at bay by using a paraffin lamp, placing it in the house at eight o'clock in the evening when frost was imminent, and leaving it to burn till eight o'clock in the morning. I simply place it in a box of soil on the floor of the house; and, notwithstanding the prevalence of cold easterly winds during the time the frost lasted, which played right on the house, owing to its exposed position, I found in the morning quite a genial warmth diffused through the house, without any disagreeable smell resulting. The lamp should be turned as full on as possible, but not to a degree sufficient to cause it to smoke. It is only when a paraffin lamp is turned down low that a disagreeable smell is given forth. I think a knowledge of the simple fact I have here stated deserves to be widely distributed; for there are many amateurs especially who have glass structures without any means of heating them, and who are put to sore trouble in frosty weather to preserve their plants from harm.—Richard Dean, *Ealing, W.*

The New Conservatory in the Central Park, New York.—This building is to be erected in the Fifth Avenue side of the Park, opposite Seventy-fourth Street. It is to be a conservatory for music and flowers. The upper storey will be used for botanical plants and flowers, and the lower storey will have a grand music-stand in the centre. There will also be seats for the people. The building is to be 230 feet long by 50 feet wide. This conservatory, the foundations of which are being laid, will have a grand Fifth Avenue entrance on Seventy-fourth Street, and it will extend from Seventy-third to Seventy-fifth Street. The contracts for the building are to be made this winter, and the whole thing is to be completed next fall. The two circular ends are to be used for flowers. They are to be surmounted by glass domes. One is to be for Ferns, and the other for Camellias.

Dennis's small Greenhouses.—Through the kindness of our townsman, Dr. Hopkinson, I have had an opportunity of inspecting one of these useful little structures, and I must say their cheapness, good workmanship, and utility, render them very satisfactory contrivances. The house in question was only finished in March last, and this autumn the gardener had a very respectable crop of Grapes in pots in it.—R. Gilbert, *Burghley, Stamford.*

Weeks's Upright Tubular Boiler.—While staying near Croydon, during part of my Christmas holidays, I was shown over a recently made nursery there, and was struck with the novel way in which one of Weeks's Upright Tubular Boilers had been set. In consequence of having a rather deep stoke-hole, it was found very inconvenient to feed the fire at the top; to obviate this difficulty, the boiler was taken out and reset, not perpendicularly as before, but horizontally, the largest end of the boiler being turned towards the feeding doors, and the lower portion acting as fire-bars. This alteration is doubly economical, as by its adoption, fire-bars are not only dispensed with, but the water heats quicker than when the boiler is set in the ordinary way.—H. Spurrier, *Eatington Park, Stratford-on-Aron.*

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—Notwithstanding the inclemency of the weather, Snowdrops, Hellebores, and Winter Aconites still continue to expand their blossoms; Crocuses too are blooming freely, as has also been the lovely Scilla bifolia, which, however, has been in some cases injured by frost; nevertheless, bulbous plants in general are making good leaves that still seem unscathed. Wallflowers are now blooming freely, and different kinds of Viola, Arabis, and Aubrietia are beginning to unfold their flowers, although the weather is at present anything but favourable for spring blooming plants. Daisies and Hepaticas also promise a profusion of floral beauty, while walls are ornamented with the cheerful yellow blossoms of Jasminum nudiflorum, and Chimonanthus fragrans in many places is still in good condition. Berberis Aquifolium, and B. Darwinii, with its small leaves and deep golden flowers, likewise contribute nobly to the enrichment of our gardens now, and will continue to do so even more extensively during these next two months. All empty flower-beds should receive a good dressing of leaf-mould and decayed manure, and be deeply dug or trenched. Where hardy material can be spared for replenishing flower-beds and borders, planting may be proceeded with. Pansies, Daisies, Arabis, Alyssums, and similar early blooming plants transplant as well now as later in the season; indeed, if carefully removed, they suffer little or no check in the operation. Ground for the reception of hardy herbaceous plants should be trenched and heavily manured, but the subsoil, unless good, must not be incorporated with the surface soil. Where Lythrum roseum is used in ribbon-border making, it should now be lifted, cut up into good crowns, and replanted in a line about 15 or 18 inches apart. Salvia fulgens in light soils may be treated in the same way. Sweet Peas should now be sown where they are to bloom, and some should be put in beds from which to make up deficiencies in case of failure; sow a few in a box under glass. Sow also some Mignonette in rows or broadcast where early blooming plants of it are wanted to flower. Some Saponaria calabrica seeds should be sown on a wall border for transplanting. A few seeds of Tropæolum canariense may also now be sown in a similar position, and a few twigs of broom stuck in front, so as to protect the young plants, when they come up, from cold winds and frost.

Bedding Plants.—Where two, three, or more Pelargoniums were placed together in one pot in the lifting season for convenience of storage, they may now be separated, potted singly, according to size, and kept without water for some days after the operation. Keep the house or frame rather close for some little time after potting. Lose no time in obtaining and striking as many cuttings of all plants as possible, for the stronger they are and the earlier propagated, the hardier and more vigorous will they be when turned out in the latter end of May. Calceolaria cuttings seldom root well in spring; nevertheless, the tops of autumn-saved plants may be economised for that purpose in the event of an otherwise deficient supply. Verbenas, Heliotropes, Ageratums, Tropæolums, Petunias, Lobelias, Coleuses, Alternantheras, Iresines, &c., when rooted, should be potted singly or transplanted into boxes, and still be kept in heat, as their tops can very soon be taken off for the same purpose, and also their side shoots, so that, with plenty of heat and convenience, a large supply may be obtained before the end of the next two months. Sub-tropical plants must also be increased as expeditiously as possible. Side shoots taken off for cuttings soon make good plants. Seeds of the various kinds commonly raised by that means should now be sown in a brisk hot-bed or warm pit. Acacia lophantha, Wigandias, Cannas, Ferdinandias, Ricinuses, Zeas, and many others, can be readily raised from seeds. Canna roots saved from last year should now be divided and started in heat. Dahlia roots may also be started. If beds be dug out about 18 inches or 2 feet deep, and filled with leaves trodden firmly, so as to be covered by a frame, and some light rich soil be placed therein, they will form excellent positions in which to plant Calceolarias, Verbenas, or Heliotropes, so as to have grand plants before they have to be set out in beds. Similar frames are useful for pricking Stocks, Asters, Marigolds, Tagetes, and other things, into.

Conservatories.—In addition to Hyacinths and other bulbous plants, these also contain blooming plants of Camellias, Azaleas, Chinese Primroses, Cinerarias, Salvias, some zonal Pelargoniums, Daphnes of different kinds, Cytisus, Zieria Smithii, several Acacias, Heaths, Epacrises, Boronia serrulata, Libonia floribunda, Tremandra verticillata, Correa cardinalis and Brilliant, Monochætum serecium multiflorum and ensiferum, Lachenalias, Roella ciliata, Oldenburgia Deppiana, Pyrethrum uliginosum, Leucopogon lanceolatus, and Luculia gratissima. Amongst climbing plants, Hibbertias, Kennedyas, Hardenbergias, Brachysemas, &c., are now coming beautifully into flower. Amongst dwarf climbers nothing is prettier at present than nice plants of Myrsiphyllum asparagoides, loaded as they are with a profusion of little reflexed white flowers, having orange-coloured conspicuous anthers. This is a plant that may be readily raised from seeds sown in a hotbed, pricked or potted off singly when up, and kept growing in moderate heat or in a cool house, either will do, only when a little warmth is employed good plants are sooner obtained than by cool treatment. Pot such roots as remain of Primula cortusoides in a compost of good loam two parts and leaf-mould one part, with a little sand. Those previously potted and beginning to grow, keep on a shelf as near the glass as possible. Give a final shift to herbaceous Calceolarias, and also to some of the shrubby ones intended for conservatory decoration. Cinerarias required for late blooming should have plenty of root room and water, and be kept in a cool, airy house. The least confinement of the roots is sure to cause the plants to flower prematurely. A few Balsams and Cockscombs for early flowering should be sown in a hotbed, and pricked off before they become spindly. Of Amarantus salicifolius a few seeds should likewise be sown for conservatory ornamentation, as well as for flower garden decoration. To succulents starting into growth water should occasionally be given, so as to keep the soil moderately and uniformly moist. The general potting of greenhouse plants should now be proceeded with. Begin with those that have commenced to grow, and which are most forward, having the ball moderately dry, and the soil used in potting in a similar condition. Do not give water after potting to such plants as have been at rest or kept comparatively dry during the winter, until they show that they need it. From Cinerarias, Calceolarias, &c., water must not, however, be withheld. In potting make the new soil as firm as the old, otherwise it only forms a channel for the water to run through without penetrating the old soil, thus greatly impairing the health of the plants.

Orchids.—A general overhauling and repotting of the several species should now take place. Before potting, however, withhold water for a few days, in order that the roots may be more easily freed from the old soil. Miltonias, Dendrobiums, Bletias, Brassias, Cyrtopodiums, &c., should be potted as they begin to grow; while Cattleyas, Angræcums, Saccolabiums, Vandas, and Aerides should be potted before they start into growth. Calanthes, when they fairly show signs of growth, should be repotted. For epiphytal Orchids, the pots or pans used should have a small pot inverted over the hole in the bottom, and then they should be filled up with broken crocks and charcoal to within 3 inches of the top; terrestrial Orchids require less drainage. The former require only a spongy material, or compost consisting of fibrous peat and sphagnum, which should not be pressed too hard. The latter require soil of a more nutritious character, such as turfy loam, leaf-mould, or peat, and rotten horse or cow-dung. Water must be carefully or rather sparingly given at first. Some will require fresh blocks, and any found to do better on blocks than in pots should be supplied with them. Orchids in general seem fond of non-resinous woods; therefore, cork, Apple, Pear, Plum, and Maple blocks are more in demand than those of deal or Pine wood. Some kinds grow best in baskets, a supply of which must also be got in readiness for them. Place some roughly broken crocks in the bottom, with rough peat and sphagnum on the surface, to firm the plants.

Indoor Fruit and Forcing Department.—The end of this and the whole of next month is the recognised period for the general spring potting of Pines. Have, therefore, a good stock of material at hand, including turfy loam, charcoal, and half-inch bones. Pot suckers at once, if necessary, but if they be weak allow them to remain for a time on the plants, even after the fruit is removed. Increase the temperature a little and apply water more plentifully. For Cherries a high temperature is ruinous, especially before the fruit has set well. A night temperature of 45° is sufficient, and water should be given only moderately. Thin Grapes as soon as they are large enough to admit of the performance of that operation; thin and stop shoots also, and regulate growth generally. Tie up to the wires such Vines as are intended soon to be started, but leave undisturbed such as are to be permitted to come naturally into growth. Sprinkle plenty of water on the paths and on other bare surfaces, in order to maintain a moist atmosphere. Thin the fruit of early Peaches, but not too much, as the final thinning should not be performed until the stoning period is over. Prune trees in late houses, the buds of which are almost ready to burst, and ventilate freely so as to rotard their too early progress. If the midday sun be hot, and the weather frosty, rather allow a more than usual rise of temperature than admit frosty air too freely. Maintain a steady bottom heat of 80° for early pot Figs. Strawberry plants, the fruit of which is colouring, should be kept near the glass, in a moderately dry house, at a temperature of 60° or 65°. Water carefully, for too much would impair the flavour of the fruit. Bring in or shift from a cool house to one that is warmer, plants for succession. Cucumbers and Melons sown last month will now be sufficiently strong for planting out. Keep up for them a steady bottom heat, either by means of hot water or fermenting material, and water them with tepid water. Sow a few more seeds for a later crop.

MARKET GARDENS.

The snow which we have had has left the ground cold and wet. Its condition should not, however, delay trenching, digging, and manuring operations, which should in all cases be pushed forward. In light or moderately dry soils, early Potatoes must be got into the ground at once. January planted Lettuces have suffered rather severely; but to make good deficiencies from the frames at present would be useless work; better wait until the end of the month, when under any circumstances they must be turned out. Seakale should be earthed up from the alleys between the rows. It is commonly grown in rows a foot or so apart. For forcing, one or two rows are lifted, leaving every alternate two for spring produce. Over those left several inches of soil should be turned from the space out of which the forcing roots were taken, finishing the whole somewhat like broad, flattened Celery ridges. Now is the time for sowing the main crop of Onions; but to do so in many cases is impracticable, owing to the saturated state of the soil. As soon, however, as fine weather or a fine day or two comes, the crop should be sown. Continue to protect Radishes, and to prepare ground for a fourth crop. Preserve Cauliflower plants from frosty winds, covering up all frames in which they are growing at night and during wet or snowy weather. Sow some seeds of Knotted Marjoram in a gently-heated frame for transplanting in May, in alleys or rows, in a plantation by themselves, or between rows of Leeks or Lettuces. A few Cucumber seeds for early frame use should now be sown, also some Tomatoes and Chilies. The same frame will do for all. On a very slight hotbed, and near the glass, some Celery seed for early crops may be sown, also some Lettuces and Cauliflowers, should the supply of the latter be deficient, in frames or under hand-glasses. In any case, some sown now comes in usefully between the autumn and general spring sowings. Lettuces from among young Carrots should be the first to be transplanted, so as to give the latter room. Continue to force Rhubarb, Seakale, and Asparagus as required, and see that some Rhubarb crowns in the open air are covered.

COVENT GARDEN MARKET.

February 14th.

Flowers.—These are well supplied in the shape of cut flowers, plants in pots, and spring-flowering plants. Amongst cut blooms we noticed those of Roses, Camellias, Azaleas, Cinerarias, particularly deep blue and red-coloured kinds; Chinese Primroses, Cyclamens, Lily of the Valley, Astilbe (Spiræa) japonica, Deutzia gracilis, Snowdrops, Hyacinths, Acacias, especially the beautiful A. Riciana and several Orchids, the latter consisting chiefly of Dendrobium nobile, Cœlogynec ristata, Trichopilia suavis, Odontoglossums, Epidendrums, &c. Vases are filled with flowers of various colours by turning the plants out of their pots and reducing their roots so as to allow several plants to be accommodated in a small space. Spring flowers brought to market with some damp Moss around their roots, whether in bloom or not, command a brisk sale.

Fruit.—The supply and demand as regards fruit are about equal. Newtown Pippin Apples continue good, and of that kind there is a fair supply; they arrive in excellent condition, without any packing whatever, not even a lining of paper being put next the wood of the barrels in which they are imported. The Apples are packed so closely as to prevent any movement. English Pears consist of Easter Beurré and Ne Plus Meuris, large quantities of the former being imported from the Continent. Pines are less plentiful than they were a fortnight ago. West Indian and Spanish fruits are good, and Oranges are improving in quality.

Vegetables.—From Cornwall and the Channel Islands large supplies are daily obtained. Young Peas, French Beans. Potatoes, &c., are moderately well supplied. Saladings and ordinary vegetables are plentiful and good.

PRICES OF FRUIT.

		s.	d.		s.	d.
Apples ...	half sieve	3	0	to	5	6
Cobs	lb.	2	0		2	6
Grapes hothouse	...lb.	6	0		12	0
Lemons	100	4	0		8	0
Melons, Spanish	each	2	0		0	3
Oranges	100	4	0		8	0
Pears ...	per doz.	8	0		12	0
Pine apples ...	lb.	6	0		10	0
Walnuts ...	per 100	2	0		3	0

PRICES OF VEGETABLES.

		s.	d.	s.	d.
Asparagus	per bundle	10	0	30	0
Beans, French	per 100	1	6	3	0
Beet, Red ...	... doz.	1	0	3	0
Broccoli ...	bundle	0	9	1	6
Cabbage ...	... doz.	1	0	2	6
Carrots ...	bunch	0	4	0	6
Cauliflower	... doz.	2	0	6	0
Celery ...	bundle	1	6	2	0
Coleworts doz.	bunches	3	0	4	0
Cucumbers	... each	2	0	3	0
Endive ...	... doz.	1	0	2	0
Fennel ...	bunch	0	3	0	6
Garlic ...	... lb.	0	6	0	4
Herbs ...	bunch	0	3	0	0
Horseradish	bundle	3	0	5	0
Leeks ...	bunch	0	2	0	0
Lettuces ...	score	1	0	2	0
Mushrooms	pottle	1	0	2	0
Mustard & Cress	punnet	0	2	0	6
Onions ...	bushel	2	0	5	0
pickling	quart	0	6	0	9
Parsley	doz. bunches	3	0	4	0
Parsnips ...	... doz.	0	9	1	0
Potatoes, Kidney...	cwt.	10	0	14	0
Potatoes, Round	... do.	10	0	14	0
Radishes	doz. bunches	0	6	1	0
Salsafy ...	do.	1	0	1	0
Scorzonera...	per bundle	0	9	1	0
Spinach	... per bushel	3	0	4	0
Tomatoes ...	perdoz.	1	0	3	0
Turnips	... per bunch	0	3	0	0
Seakale	...per punnet	1	6	2	6

THE GARDEN.

" This is an art
Which does mend nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

THE INDOOR GARDEN.

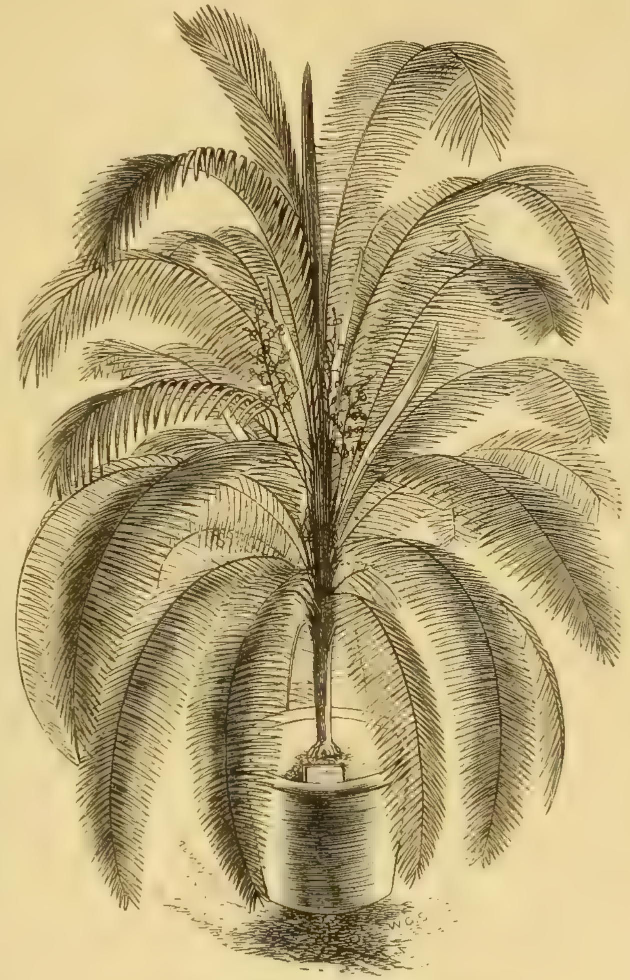
COCOS WEDDELLIANA.

(LEOPOLDINA PULCHRA).

To this truly elegant Palm allusion has already been made in The Garden for 1872 (p, 313), but the magnificent plant of which we now give an illustration deserves to be more fully described than it was on that occasion, being, as it most undoubtedly is, one of the finest specimens of the kind in Europe. Culturally speaking, it is one of the *chefs d' œuvre* of the celebrated collection of plants at Manley Hall, a collection that has done much to elevate the general tone of plant culture in the North of England. This graceful South American Palm has thirty-seven fine leaves on it, some nearly five feet long, and all of them beautifully recurved. These drooping fronds are of a deep and glossy green, collectively forming a noble plume of finely divided foliage.

Like many of the other Palms in the Manley Hall collection, this plant fruits very freely, bearing an abundance of fertile seeds, from which Mr. Petch, the gardener there, has succeeded in raising young plants. The male and female flowers of this species are small, and are borne together on the same spadix. After fertilisation has taken place, the female flowers are succeeded by oblong or egg-shaped fruits about the size of a common Hazel-nut. The fruits of this species are not so obviously three-sided as are those of other species of the same group, the common Cocoa-nut (Cocos nucifera) for example. When fully developed this Palm is an effective addition to either the plant stove or warm conservatory, while as an exhibition plant it stands unrivalled. It grows freely in fibrous loam and a little coarse sand, and when in active growth it requires a moist atmosphere and an abundant supply of water at the root.

F. W. Burbidge.



Cocos Weddelliana, (syn. Leopoldina pulchra).

RUSSELIA JUNCEA AS A BASKET PLANT.

This formed some years ago one of our most elegant exhibition plants, but it has now fallen almost out of cultivation. It is a free-growing, light, and airy stove plant, with long drooping branchlets, tipped in the blooming season with myriads of bright scarlet, slender, tubular flowers, each about an inch long, and not more than a tenth of an inch in diameter; hence, whether in bloom or not, it forms a very elegant plant. Its drooping habit renders it peculiarly suitable for basket cultivation, and, though one plant after two or three seasons' growth would form a very graceful mass, it is better for the purpose of immediate effect to plant four or five in a group. Assuming that you have a basket 18 inches in diameter, and of proportionate depth, line the inside first with live Sphagnum, to which may be added some of the smaller Lycopods. Then fill it with a compost, consisting of rough fibrous loam three parts, flaky half-decayed leaf-mould, and dry cowdung made sufficiently hot over a flue or stove to destroy insect life, one part, and a liberal admixture of charcoal, broken oyster shells, and some gritty sand. Mix the whole intimately together, having it at the same time rather dry, and then fill the baskets quite firmly. In the centre, however, place a soft porous 6-inch pot, with the hole at the bottom stopped up, and this kept constantly filled with weak manure water will be found of great service, especially in the second and after years of the growth of the plants. Taken out and examined, it will be found that the roots will have wrapped round it in a perfect network. The basket being ready, procure some Adiantums and other small-growing Ferns and Lycopods; fill them in as a fringe around the sides, and as they grow they will form a desirable covering for the basket work. Then plant your Russelias, placing them equidistant around the circumference of the basket, and cover the surface with a few more dwarf-growing plants. The temperature of the house should be that of a damp stove, from 60° to 75° by fire-heat, rising to 90°, with plenty of moisture in the atmosphere, in bright weather. As the plants get established and the roots become active, the syringe must be freely used, with tepid water, on all sides of the basket; and if sometimes clean weak manure water be added to it, growth will be thereby promoted. In the matter of watering plants in baskets, it is necessary that it be done thoroughly, so as to soak the whole mass of soil; and if this cannot be done by simply pouring water upon the surface, then the basket must be lowered into a tub containing sufficient warm weak manure to soak the whole thoroughly. For permanent plants this steeping of the soil will be necessary at the commencement of growth in spring, and perhaps once a month through the summer and autumn. This, however, will depend much upon the copious manner in which the plants are syringed: the surface of the basket being large and the air hot and sometimes dry, the evaporation will be much greater than it would be from a pot or tub containing a similar amount of soil. The branches of the Russelias, as they gain strength, will rise to the height of 5 or 6 feet, and the branchlets, drooping, in the most graceful manner, will form a living fountain of exquisite beauty. To bloom the Russelias successfully it is necessary that the maturing process be properly attended to in the autumn—that is, the quantity of water must be reduced towards the middle of August, the plants be exposed to full light and a free circulation of air, and in that manner the blooming principle is sure to be encouraged. Through the winter keep the plants dry rather than otherwise, but at the same time see that they do not flag. When growth commences in spring, each tiny branchlet will be tipped with flower buds in various stages of development, so that a succession of flowers will be maintained for a long time. Of course in the blooming season manure water must be supplied, and by copious syringings, sometimes with sulphur water, the plants must be kept clear of red spider, which is a sad pest to them. A.

CEROPEGIAS.

These constitute a small genus belonging to Asclepiads. They have all more or less tuberous or thick filiform roots, slender, creeping, or ascending stems, and opposite leaves; their flowers, which are remarkable for singularity of form, and, in some species, striking beauty, are borne mostly in small umbels, which continue in perfection for a considerable time, Ceropegias, coming as they do chiefly from Africa or India, are mostly stove plants; those which are natives of the southern parts of Africa enjoy a somewhat drier and cooler atmosphere than the Indian kinds, and have larger tuberous roots; they should be potted in well-drained good rough sandy loam. In propagating them, the cuttings should be inserted in sand and placed in a brisk heat, but they should not be kept in too close an atmosphere, or they are liable to damp off. The following are a few of the handsomest species :—

Ceropegia Gardneri.—This is a free-growing handsome stove climber, which is very ornamental either trained upon a rafter, pillar, or upon a wire trellis; in the latter case a balloon-shaped one is best. The leaves, which are opposite and some 3 inches long by 1 inch broad, are dark green above but paler and tinged with dull purple below. The flowers are produced in small umbels from the axils of the leaves; the corolla tubes are contracted in the middle, leaving both the lower and upper portions bulged out; the limb is five-lobed, the segments curving over the throat and becoming temporarily united at the points, giving them a peculiar corona-like appearance. The ground colour is white, over which is distributed a profusion of large and small spots and blotches of purplish-brown. As has just been remarked, the pots for this species must be well drained, and a little peat will be found a beneficial addition to the compost in which it is potted. During summer it should have plenty of water, but in winter it must be given very sparingly; still it will not bear what is called drying off. When it begins to grow repot, but at no time will it require much pot room. It blooms from May to the end of July. It is a native of Ceylon.

C. elegans.—This is another attractive plant, and one that has been long in cultivation, having been introduced from the East Indies about the year 1824. Its roots are filiform and fleshy; its leaves smooth and dark green, and its flowers are produced in abundance during July and August; they are large, and in shape are similar to those of the preceding species; they are purple in colour, ornamented with numerous small green spots, the margins being deep purple, and furnished with long, shining, black hairs. The treatment recommended for C. Gardneri suits this species admirably.

C. Bowkerii.—This singular and truly elegant species comes to us from South Africa. It is not a climber, and does not require the temperature of a stove, although a little warmer place than an ordinary greenhouse suits it best. Its roots are large and tuberous. The stems, which are slender, erect, and some 12 or 18 inches in height, bear opposite linear-subacute leaves, about 2 inches long, and of a pale green colour. The flowers are upwards of an inch and a half long, the prevailing colour being sulphur yellow, and, unlike the previously-named Indian kinds, the long segments are not erect and contiguous, but reflexed so as to cover the tube; the throat of the corolla is purplish brown, whilst the oblong segments are sulphur coloured, spotted with emerald green, and beautifully fringed at the edges with long, soft hairs. The stems are herbaceous, and during winter it should be kept dry, its thick tuberous roots enabling it to withstand such treatment with impunity; but during the growing season it enjoys an abundant supply of water and plenty of sunshine and strong light.

C. sororia.—This resembles the preceding, and is a native of the same country. It has thick tuberous roots, and, like C. Bowkerii, requires a dry season, or period of rest. It differs, however, from that kind in having a climbing, or rathe a twining, stem. The leaves are opposite, linear-lanceolate in shape, about 6 inches long by half an inch or rather less in breadth, and deep green on the upper side, but paler beneath. The flowers are larger than those of C. Bowkerii, and, as in that species, their lobes are reflexed, and not erect and contiguous; but the segments do not completely cover the tubes, in consequence of its large size; the ground colour is pale green, shading off into yellowish green towards the upper portion of the tube, which is moreover dotted with reddish pink; the reflexed lobes of the corolla are an intense deep green, transversely banded with blackish purple upon the upper side, the lower surface being soft pink, through which the transverse bands on the upper side are plainly visible; the edges are sparingly furnished with short hairs. It blooms during May and June. In point of beauty and interest, few plants surpass these last two species, both of which are natives of Kaffraria.

C. oculata.—This is an old but extremely beautiful species, the flowers of which somewhat resemble the head of a snake. In habit it is scandent and slender; the stems are ovate, or ovate-cordate, and are furnished on the upper surface and at the edges with a few hairs. The flowers, which are large and handsome, are largest at the base; the tube is long, yellowish green, and spotted towards the upper part, the apex of the blooms being vivid green. This species requires a stove, and produces its flowers in August and September. It is a native of Bombay.

C. Thwaitesi.—Although at first sight this seems nearly allied to C. Cumingiana, yet it is sufficiently distinct from that kind to render it worth growing along with that plant. It is a slender climber, which produces green and brown flowers in abundance; the base of the flowers is much inflated, and the tube strikingly contracted near the middle. It blooms during September and October. It is a native of Ceylon.

C. Stapeliæformis.—This is a somewhat stout plant, the stems being nearly 2 inches in circumference, round, smooth, and dull green. The flowers are large and showy, and are produced mostly in pairs on long slender branches. These latter are dark purple, and issue from between peculiar spiniform masses on the main stem. The corolla is large, inflated at the base, and contracted a little above the middle, white tinged with green and profusely spotted with dark purple; the tube is hairy within and the sides reflex, giving fully developed flowers a grotesque appearance. This species, which is a native of the Cape of Good Hope, blooms during April and May.

C. Cumingiana.—This superb Javanese species is a slender climbing stove plant. Its leaves are cordate at the base, and membranous in texture, dark-green tinged with brown. The flowers are large and showy, and are produced in clusters of from six to ten; the ground colour of the tube is creamy white; the limb being rich purple and chocolate with pale coloured streaks. It blooms in profusion during July, August, and September. G.

The Tree Pæony Indoors.—Few are aware what striking and excellent plants tree Pæonies are for forcing and decorative purposes. Amongst them there is no end of varieties of bold, characteristic beauty. No flower is more conspicuous at a long distance, its glowing shades of colour shining forth with brilliant effect. Indeed, the distinct and striking characters of the whole plant are points of excellence rarely seen combined in one species. Little trouble or care is required to have tree Pæonies in perfection in February and March. Plenty of light is the most essential thing in their culture at that period; they should be placed as near the glass as possible, plunged in a mild bottom-heat, and occasionally syringed. The temperature of the house need not exceed 50° or 55°.—*Florist.*

Tuberoses.—I bought some Tuberose roots last January, and grew them in pots, but none have produced flowers. Is there still any probability of their flowering? Nearly all the leaves have died off.—J. Clark. [The bulbs of the Tuberose (Polianthes tuberosa) are of little use after a season's growth in England; consequently they are in general only grown one year, and a fresh supply obtained for the succeeding one from importations annually made of these bulbs from Italy. As your bulbs have not flowered during the past summer, they may possibly do so in the coming one. Keep the roots pretty dry just now, and in the end of the month pot them into 6-inch pots, using light rich turfy loam, and place the pots in a gentle heat until they begin to grow. Transfer them then, after gradually moving them to a lower temperature, to a position near the glass in the greenhouse. Unless they flower this summer they will not be worth further trouble.]

THE FLOWER GARDEN.

HUMEA ELEGANS FOR OUT-DOOR DECORATION.

FOR planting round or near fountains placed in the centre of a flower-garden, this plant stands unrivalled. Its graceful drooping tresses of silky brownish orange-coloured flowers, which glitter in the sun, when moved by the breeze, give it a charm beyond description. Although introduced from New South Wales about the beginning of the present century, it is only of late years that this biennial has been used to any extent for out-door decoration, and it may be truly said that no plant gives more grace to the *tout ensemble* of the garden than it does. Whether as a back line to a long border, as a single specimen to let into the lawn, or for the centre of a bed or vase, it is most charming; and as its culture is easy, and its period of beauty extends from May till November, a brief notice of how it may be best grown may not be unacceptable to your readers.

In June, sow the seeds in a pan of light soil, and place it in a warm frame until the plants are in rough leaf; then remove them into a cool frame, where they can receive plenty of air, and slight shading during hot sunshine for a fortnight, when they will be ready to pot off singly in thumb pots, using light rich soil for the purpose, and plunging the pots to the rim in sand or saw-dust. Keep them close and shaded until sufficiently strong to stand out, when they must be gradually exposed to sun and air, after which they will only require to be covered with a glass sash during cold or wet weather. Shift them into larger pots throughout the autumn and following spring, as they require it, taking care not to let them become pot-bound, as their beauty is much lessened by being in any way stinted, either in pot room, moisture, or richness of soil. By liberal treatment they will retain all their foliage in a healthy green state until finally destroyed by frost. During winter, a low temperature, plenty of air, and being kept near the glass, suits those intended for planting out better than heat and a close atmosphere. Give plenty of water before turning them out of the pots, and also for a week or two after planting, until they are fairly established in the soil, which should be composed of turfy loam and well decayed manure or leaf-soil. When kept under glass to flower in pots for indoor decoration, they are not half so beautiful as when exposed to the open air, their colour indoors being a kind of greenish pink, which gives the plants a sickly appearance. Slightly fumigating them during the spring months will keep them free from insects, which are apt to infest the under surface of their foliage. For our illustration of this plant we are indebted to Messrs. E. G. Henderson. J. S.

Humea elegans.

BOUVARDIAS.

THESE handsome plants cannot be too extensively cultivated, for the sake of their brilliantly-coloured and fragrant flowers. They are easily grown in a light, sandy soil, or in a mixture of peat and loam. The dwarf kinds may be grown in pots, and planted out in groups, and the more vigorous kinds in raised flower-beds in the open air during the summer, late-flowering species being repotted in autumn, and transferred to plant-houses and rooms. They are easily propagated, either from seed or from soft-wooded cuttings struck in light soil, in pots or under a frame, in a very strong, moist heat, giving them but little or no air. In a short time they will be fit to repot, after which they should be again placed for some time under a frame with the air excluded. A good deal of air may be afterwards given, but the heat should be always kept up. They are also propagated from portions of roots taken from good plants and kept in heat during the winter. The roots are to be cut in pieces about half an inch long, planted vertically in pots, and placed under a frame in heat, with the air excluded. In from eight to fifteen days, most of them will have sent out shoots, and they should then be treated in the same manner as cuttings. The plants from which the roots have been taken will afford good cuttings if they are repotted and placed in a strong heat with the air excluded. Such plants, however, soon die. Roots taken from bad plants, which have been exposed to the cold the whole winter, will send out shoots, but soon perish. Success in propagating these plants depends on not operating before the end of February or early in March, on using vigorous herbaceous cuttings, placing them in a very strong and moist heat, and repotting them as speedily as possible. Plants raised in this way will be fit to remove into the open air in the following May or June. All the species are not capable of being propagated from root-cuttings; for instance, B. angustifolia and B. jasminoides hardly ever send out shoots when treated in this way, while B. Davisonii and others succeed admirably. The last-named kind (B. Davisonii), which is also known as B. Vreelandii, cannot be too highly spoken of. It is a vigorous grower, with a compact habit, and produces a profusion of white flowers throughout the whole year. B. Queen of Roses, which has the same habit, is a fine kind with very fragrant rose-coloured flowers, and B. alba odorata is invaluable for its still more fragrant flowers and compact habit. These last three are most valuable plants. DONATIEN GUIHENEUF.

WALLFLOWERS.

PROBABLY many who reside in and around London are hardly aware of the vast breadths of Wallflowers grown in many of the market gardens near that city, from which to supply Covent Garden and other metropolitan markets with the bundles of blossoms one sees in such quantities in early spring. The type or strain grown for market is of a dwarf bushy growth, which produces an abundance of dark, richly-coloured flowers. Growers who cultivate Wallflowers for the London markets select the plants from which they take the seed to supply their annual crops with the greatest care. They must have habit, colour, and precocity, for it is an important matter to be able to get flowers into market as early as possible. In the western suburbs of London, especially, there can now be seen large patches of dark Wallflowers coming rapidly into good bloom. Of all the strains of dark Wallflower yet offered by seedsmen—even in small packets at a large price, and with high-sounding names—nothing can excel the beauty of the market strain. A few years ago quite a distinct type, known as Young's Blood, came from the midland district, and it had the appearance of having been selected from the double German strain. The flowers of this are large and of a rich blood-crimson hue, but the petals are long and loose; it is of tall growth, and the majority of the plants lack a free branching habit. The seed of Wallflowers imported from Germany yield many shades of colour—among them purple and violet colours—but, though attractive masses can be formed of these, they are not nearly so popular as the dark strains of English growth. Yellow Wallflowers are being sought after and improved in the present day. There is one strain especially which finds much favour in the spring garden, that known as the Belvoir Castle dwarf yellow. This is of a dwarf branching habit, and when quite true forms charming masses of a clear pale yellow hue, without any stain or trace of dark among it. By careful selection this can be obtained in a form well adapted for edging purposes. What is known as the yellow Tom Thumb is of a taller growth, and of a deeper hue of colour, but very pure and effective; the flowers are stout and of good form. A really good purple strain would be very acceptable, and the wonder is it has not been forthcoming ere this. The choice old double types of the Wallflower, such as the double yellow, double orange, double purple, double dark, &c., good and valuable though they are, are not grown in our gardens as they deserve to be. In cottage gardens, however, they may be frequently met with in beautiful condition. These are invariably increased by cuttings, which strike readily. The genus Cheiranthus also includes some fine species and hybrids, such as C. alpinus, C. ochroleucus, C. mutabilis, and C. Marshalli, which are perennial in character, and the plants last for years, increasing in size with age if allowed to remain undisturbed. They are of a very close and compact habit of growth, and bloom most profusely in dense close masses, and the flowers take the form of trusses, and not that of spikes, as in the case of the varieties of C. Cheiri. Of those just named, the two former (sometimes these are called Erysimums) are very similar in colour, and are generally regarded as being identical, the flowers being of a pale yellow hue. C. Marshalli has strong orange flowers, stout in texture and fine in shape, and it makes a grand bed or ribbon border in spring, while single plants in borders are highly effective. These kinds yield plenty of seed pods; but, for some reason, the seeds never become matured, and therefore they must be propagated by cuttings. After the plants have done blooming, they make a quantity of young shoots, and, if these are taken off about July or August, and pricked out in a bed in some light sandy soil on a shady border, or placed under a handglass, they soon take root, and grow into strong plants by the following spring. It would seem that C. Marshalli is for some reason much the scarcer of the three, and by some cultivators it is thought not to be so readily propagated.

R. D.

Sparaxis pulcherrima and Thunbergii.—The Rev. H. Harpur Crewe, in a communication to one of our contemporaries, speaks in high and well-deserved praise of these two plants. While justly stating that they are "very elegant and striking," he has, however, omitted to notice their very great difference in habit, and in fact rather speaks of them as if they were much alike. S. pulcherrima is by far the finer and more elegant of the two, its flower-stems growing to a height of 4 feet or more, and arching over at their extremity in a broad and graceful curve, from which the beautiful pensile flowers hang on long thread-like stalks. S. Thunbergii, although a very handsome plant, has nothing of the graceful waving beauty displayed by the tall, slender, arching flower-stems of S. pulcherrima. It has a stiffer habit and is a much dwarfer plant, with erect flower-stems seldom more than 2½ feet high. The flowers, moreover, have very short stalks and are not pendulous like those of S. pulcherrima.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Flowers and Shrubs for a Steep Bank.—I have a bank about 8 feet high, and 50 yards long, steep, and with a little brook running below it through my garden. It has a northerly aspect, but is very sheltered. Can any of your readers suggest how it may be made as ornamental, by flowers or shrubs, as I am sure it could be if rightly handled?—Country Parson. [Your best plan is to naturalise hardy plants on your bank.]

The Battle of Life among Plants.—The last number of the *Popular Science Review* contains an interesting paper on this subject. Experiments are described where numbers of plants were placed together in the same bed, and certain plants, after a few years, alone remained, the others having succumbed. One of the most persistent was found to be the Couch Grass; and, in general, plants with a large root area showed most vitality in all soils.

Drying Plants.—I am intending, if all is well, to make a tour in the Holy Land. May I ask you to be so kind as to let me know where I can procure the best appliances for drying and preserving flowers; and, indeed, would you kindly tell me what they ought to be?—W. E. [Suitable paper for drying and preserving plants can be obtained at Mr. Newman's, 9, Devonshire Street, Bishopsgate Street. A good-sized portfolio with long straps would be most convenient to take with you. See our article on "Drying Wild Flowers" in The Garden for August 31st, 1872, Vol. II., p. 196.]

The Common Garden Marigold (Calendula officinalis).—This is without exception the most remarkable of all hardy biennials in its persistent winter blooming qualities. Plants raised from seed sown in July have been in blossom the whole of the winter, and seem to defy any weather short of intense frost. How bright and cheerful the flowers look under the leaden skies of midwinter! And the colour is the richest and mellowest orange to be found in any flower that blossoms. This old-fashioned Marigold is well worth attention, as it sometimes developes a form and density of petals that would not discredit the finest Aster. Some day we shall see it elevated to a better position, and gardeners will then wonder that its charms should have been so long overlooked.—A. D.

THE ARBORETUM.

THE MOVEMENT OF THE SAP.

In common with other readers of The Garden, I am greatly pleased with the new theory in reference to sap movement, as expounded by "A. M." (see p. 92). As the discussion of this interesting topic may be attended with good results, I wish to state that whilst I concur with your correspondent in his conclusion "that there is no descent of the sap in autumn," I would explain the fact in a somewhat different way. To follow "A. M." step by step, I beg to suggest that the process of the ascent of the sap is mechanical, and the result of pressure from below, and not of suction from above. The sap being an exudation from the roots, and formed at a uniform rate and in uniform quantity, must by the mere force of its own pressure rise upwards, exactly in the same way as mercury rises in a barometer from the expansion of the mass. When the sap, in this manner, reaches any part of the plant, growth commences, and by the changes which the sap undergoes during its deposition, the wood, leaves, flowers, of every plant are produced. There is, then, no question as to the ascent of the sap in spring and summer. I think the mechanical theory explains the mode of its ascent more rationally than the "suction" theory of "A. M.," which is not suction in the strict sense of the word, but only the assimilative power exercised by the tissues of a plant upon the food brought into contact with them; this food, which we term sap, being pressed or pumped upwards by the ever increasing formation of the sap from the root-action that is going on below; so that, to put the matter in plain words, for every ounce of sap which is exuded by the roots, another ounce of sap, previously formed, is driven upwards, by reason of the *vis a tergo* acting upon it. And if further explanation be necessary, I would add that were there no penetrative tissues for the transmission of the sap upwards, the substance of the plant would be burst in all directions. I agree with those who dispute the old theory of a descending sap. The first question which any intelligent botanist would ask, when the idea of a descent is suggested, would be *cui bono?* Where is the sap that is to descend? It is quite certain that every particle of sap that has ascended throughout the season has been assimilated by the plant, leaving no residue; for as autumn supervenes, and the changing temperature causes the leaves to die and fall, the roots also are similarly affected, and their sap-producing power gradually diminishes until it ceases altogether in the majority of cases. This rational account of the matter explains why Professor McNab could not in any of his experiments discover the sap descending. It is not, as "A. M." puts it, that the pump has lost its suckers, but that there are no suckers at all, and no sap remaining to be sucked, or to ascend. It does not cease to ascend for want of the continued suction which "A. M." assumes, but solely because the root-action, which produces the sap, has ceased, and no more can be supplied until the plant has had an interval of rest—that long winter's sleep during which tired nature's power becomes resuscitated.

Robert M. Chamney.

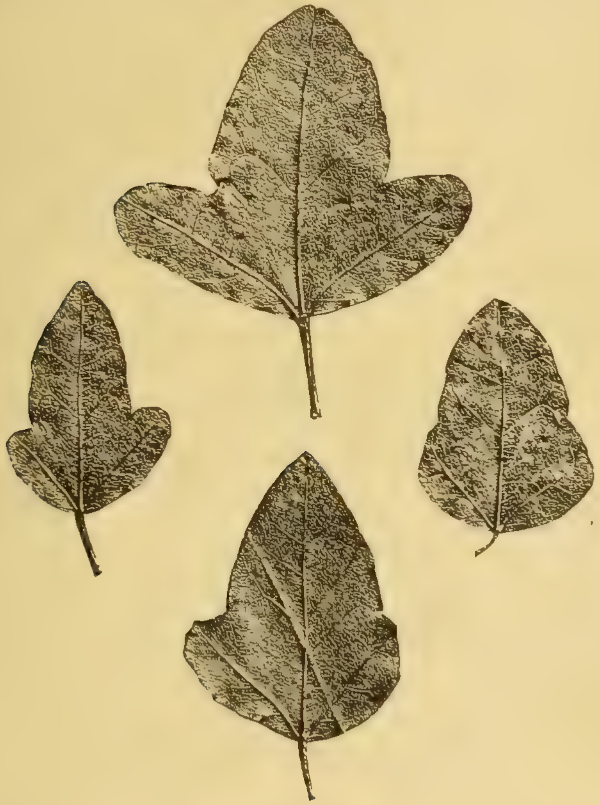
Mountain White Pine (Pinus flexilis).—This species, to which allusion is made at page 128, occupies the sub-alpine belts of the Rocky Mountains and the Sierras. It differs very much in size. At 10,000 feet altitude it is a tree of 130 feet high, and is from 2 to 3 feet in diameter; but on the high exposed crests of the Sierras and Mount Shasta, it is reduced to a mere straggling shrub, creeping on the ground. The cones in consequence vary considerably in size. Where the tree has obtained a stately size, as is the case on the mountains of an elevation of 10,000 feet a little east of Little Yosemite Valley, its cone measures from 4 to 5 inches; but where it is reduced to a mere shrub, they are scarcely from 1 to 2 inches long. It is a fine tree with tapering trunk and conical outline, branching almost from the base; the lower branches are horizontal, the upper ones ascending. The wood is white and soft; the annual rings from one-eighth to one-half line, on an average one-fourth line wide. In the Rocky Mountains it occurs from New Mexico to the forty-ninth parallel, never forming entire forests. There it associates with P. contorta and P. aristata. On the high crests of the Sierras it is found growing along with P. contorta and Abies Pattoniana. The species sometimes described under the name P. albicaulis, and P. cembroides, is P. flexilis.

HARDY TREES AND SHRUBS.

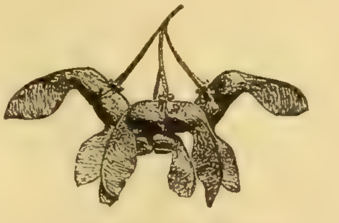
BY GEORGE GORDON, A.L.S.

THE CRETAN MAPLE (ACER CRETICUM).

THIS forms a handsome sub-evergreen small tree, from 15 to 30 feet high, with a round, dense spreading head. It is a native of Greece and Naples, particularly of the mountains in Crete and the other islands of the Grecian Archipelago. It was first introduced in 1752. The leaves are small and variously shaped, but mostly more or less bluntly three-lobed, rounded at the base, and set on short footstalks. They are dark glossy green above, smooth on both surfaces, three nerved, of a thick, leathery texture, and, according to the rigour of the winter, more or less persistent. The lobes are entire or slightly crenated on the edges, and the lateral ones, when present, the shortest. The flowers are greenish yellow, and are produced in the end of May, in few-flowered, terminal, erect, or slightly nodding corymbs. The fruit or keys are small and smooth, with thick carpels and parallel wings, placed rather distantly apart. This Maple is sometimes named in botanical works Acer obtusilobum, and must not be confounded with the Acer creticum of the nurseries, which is Acer heterophyllum, an evergreen bush, seldom more than 4 or 5 feet high. The finest example of this rare Maple in England, or perhaps anywhere, is at Syon. This tree is, at the present time, 32 feet high, with an ample head 46 feet through, and a stem 9 feet in girth 2 feet from the ground. The length of a full-sized leaf is 2 inches, including the footstalk, which is about an inch long, and the breadth is $1\frac{3}{4}$ inch.



Acer creticum.



Fruit or Keys of Acer creticum.

THE YELLOW CYPRESS.

THE Yellow Cypress of Vancouver Island, and the north-west coast generally, is certainly Cupressus nutkaensis, and not Thuja gigantea —a tree which I have shown in a former note is universally known in British Columbia and the northern tracts of North-west America generally, as "the Cedar." In Vancouver Island Thuja gigantea and Cupressus nutkaensis are the only two native Cupressineæ, and the latter is very little known to the general body of the colonists, or even to the lumbermen, whose knowledge of it is derived chiefly from its occurrence on the coast further to the north. Wherever I have seen it, either in Vancouver Island, British Columbia, Washington Territory, or Oregon, Newberry's description applied to it very well indeed. It is essentially a northern and not a southern tree. Towards the south, only a few stragglers are found, and generally, as in Vancouver Island and southern British Columbia, at considerable elevations. There it is always a ragged tree, in most cases little more than a large shrub, and agreeing, as I have said, excellently with Newberry's description. As you travel further to the northwards it attains its maximum of development—commencing to be a common tree just as Thuja gigantea begins to be a rare one. About Lynn's Canal (lat. 58° N.), the latter species ceases, while from about 53° or 54° N. lat. to north of Sitka, Cupressus nutkaensis is a large, handsome, and abundant tree. Here it attains a size equalling that of Thuja gigantea, as seen towards the south, and how large that is may be guessed when I mention that in a rich river bottom I measured a Thuja which was 45 feet in circumference at the base, and nearly 250 feet in height. This was in the Nittinat River, in Vancouver Island (see my paper "Das Innere der Vancouver Insel," with map of our explorations, in Petermann's "Geographische Mittheilungen," heft. I., u. iii., 1869, &c.); but I have notes from various friends of mine in different parts of the country, of others which they had measured in the damp forests of Abies Douglasii, in the region to the west of the Cascade range in British Columbia, almost if not quite as large.

Thuja gigantea is, among the trees on the north-west coast, the Indian's best friend, for out of its wood and bark he manufactures endless articles of domestic, hunting, fishing, and warlike economy (see the paper on "Thuja, &c.," already mentioned, "Trans. Bot. Soc. Edin." vol. ix., pp. 358—378). Most of their canoes are hollowed out of it, at least in Vancouver Island; and the case quoted by Mr. Murray in the "Pinetum," from one of my letters, where a canoe was made out of Cupressus nutkaensis, in Vancouver, was quite an exception, and indeed the canoe was probably traded from some of the northern tribes, and not of Vancouver manufacture at all. The Indian ropes are also very commonly twisted out of its bark. The tree which I took for Thuja plicata, and out of which I happened to see the Indians, just at the time I wrote the letter quoted, twisting ropes, I believe, from after investigation, to have been only a stunted form of T. gigantea, and that T. plicata is not a separate species, but, for reasons which I have given in another place, and cannot now again repeat, is, indeed, only a variety of T. gigantea. North of lat. 53° Cupressus nutkaensis takes the place of Thuja gigantea, and is applied by the Indians to all the useful purposes of T. gigantea, and to some others in addition. For instance, at the Matlakatlah Mission on the coast of British Columbia, in about lat. 54° N., where there are fine groves of it, it is sawn into lumber and sent to Victoria, where it meets a ready sale among the cabinet makers, as it takes a fine polish, and works beautifully. Most of the prettily polished discs and little cylinders used by the Indians in gambling are made either from this wood or from that of Acer macrophyllum. It is also valuable for ship or boat building. Sir Edward Belcher, when on the north-west coast, in H.M.S. Sulphur, built a boat at Sitka of this wood, as I am informed by Staff-Commander George, R.N., at that time one of the officers of the Sulphur. In 1864, I noticed several planks of it on board H.M.'s gunboat Grappler, and on inquiring what use they were put to, I was informed by Commander Edmund H. Verney, that he found it the best wood on the whole north-west coast for repairing boats with. A polished specimen, which he presented to the botanical museum in Edinburgh, has been frequently admired for its fine grain. The wood is whitish, but in its fresh state is yellower, hence the name "Yellow Cypress" applied to it. It is light, tough, durable, and easily worked. The property of durability it shares with Thuja gigantea, and in addition it has a pleasant fragrance. On this account the Russians about Sitka used to call it dushnik or "scented wood." It was absolutely at one time exported to China, and returned to us marked with Chinese characters, which warranted it as "real Chinese camphor wood," puissant for many purposes, and a sovereign remedy against moths in drawers! In repairing old Fort Simpson, the only log found sound after 21 years' trial of those used for "underpinning" was a stock of this. Both it and Thuja gigantea are very indestructible in the ground; hence the Hudson's Bay Company, wherever possible, used the trunks of these trees as pickets for their forts.

A wreck on the beach at Sitka, originally of this timber, was, I am informed by Mr. W. H. Dall, at present in charge of some coast exploration of Alaska for the United States Government, found, 32 years after, "as sound as the day it was built; even the iron bolts were not corroded." It would, equally with Thuja gigantea and Libocedrus decurrens, make a handsome lawn tree. The latter, however, is a wretchedly poor timber tree, and neither it nor C. nutkaensis is, in my opinion, so graceful in appearance as my favourite T. gigantea, which I am surprised has not been more extensively planted in this country.—*Robert Brown, in Gardeners' Chronicle.*

PLANTING TREES FOR POSTERITY.

LITERAL TRANSLATION IN VERSE FROM THE POETIC FABLE OF LA FONTAINE.

THE readers of THE GARDEN (Jan. 11th) must have been much charmed with La Fontaine's charmingly poetic fable on this subject, and must have thanked William Cobbett (who was a writer on trees and gardens as well as politics) for his very close and elegant prose translation of it. Although the rustic politician very justly observes that to attempt a translation in verse would be like an attempt to make a thing resemble a rainbow, and pronounces La Fontaine's lines absolutely inimitable, which is the simple fact, still, after reading the delightful little poem in question, in its own French, readers of THE GARDEN might like to see it in the best English verse that I can supply.

THE OCTOGENARIAN TREE-PLANTER AND HIS YOUNG CRITICS.

(A FABLE TRANSLATED FROM LA FONTAINE.)

A MAN of eighty once was planting trees ;—
Three youths passed near, with many a gibing word ;
"Build, old men might," cried they, "but plant ! that was absurd !"
Asked one, "Are you a lunatic, sir, if you please,
That you are planting Oaks and Elms like these ?
To reap results from planting such a park,
You should live longer than a patriarch.
Then why," they urged, "fill your last days of life,
With toils, whose fruits you ne'er can hope to see ?
Think of the past, of thy long mortal strife,
And dream not of a future, not for thee ;
Bright future visions are for such as we."

"To you, not more than me, such dreams belong,"
Retorted placidly the aged man ;
"All earthly things have but the briefest span :
Who knows, of all the human throng,
Which life-thread will be short, or which be long ;
The cruel Fates,
Don't go by dates,
Nor can their secret e'er from them be wrung.
Sometimes they miss the aged thread, and cut the young.

Life is not always safest with the strongest ;
We cannot then,
By mortal ken,
Tell who shall see earth's bright blue sky the longest.
Say ! can one single instant e'er ensure,
That for one other, life may still endure ?
My grandchildren beneath these trees may play,
In the cool shade, on many a sultry day.
Do you forbid then, to the sage,
Simply on the score of age,
And that, forsooth, he's not a boy,
To plant, that others may enjoy ?

Such work yields fruit without delay,
To garner in my heart to-day ;
May be, to taste to-morrow, too ;
May be in days not spared to you.
Who knows the things in Time's dark womb ?
I, perhaps, may sit upon *your* tomb—
To watch the blushing dawn of some bright morning ;
And so, good friends, let young and old take warning."
He spoke aright,
In the sinking light,
Of that autumn night.

One of the three, upon a long voyage bound,
Was, even in the port, untimely drowned ;
And one—ambitious—wishing fame to gain,
While soldiering, by a chance shot was slain.
The other paid to death his fatal tax,
By falling from a tree,
(As though 'twere doomed to be)
That he was marking for the woodman's axe.

The old man o'er their gravestone grieving bent,
And made these lines their lasting monument.

AN OCCASIONAL CONTRIBUTOR.

ESTABLISHMENT OF THE MISTLETOE IN IRELAND.

As this is a good season in which to attempt the establishment of the Mistletoe, where, from its scarcity or other causes, this may be desired, Dr. Moore's account of propagating the plant at Glasnevin may be useful to some of our readers. About thirty years ago (says Dr. Moore) the only Mistletoe plants in Ireland with which I was acquainted were three: one at the College Botanic Garden, Ball's Bridge; another, recorded by the late Dr. Wade, which he saw growing on a Crab-apple tree that had been imported from England —probably the same as that mentioned by Rutty, in his "History of Dublin," as growing near Island Bridge ; and some old plants of it in the garden of Mr. Thomas Acton, Westaston, County Wicklow. These had all been artificially propagated, as the Mistletoe is not a native of either Ireland or Scotland. At that period the late Dr. Whately, Archbishop of Dublin, who was so enthusiastically fond of everything connected with vegetable physiology, became aware of the scarcity of Mistletoe in Ireland, and brought with him from England a quantity of the berries or seeds, part of which he gave to me to try my hand at cultivating, and kept a portion himself for a similar purpose. It may here suffice to state that we both succeeded in getting plants to grow from those seeds, and that now there are many plants in various parts of the country. At Glasnevin there are at least a couple dozen bunches of Mistletoe, growing on six different kinds of trees; but we have not yet been able to get any established on Conifers, though I have seen Mistletoe growing abundantly on Pine trees near Darmstadt in Germany. The seeds of the Mistletoe are surrounded with a white, pulpy, viscous matter, which causes them to adhere to the boles and branches of the trees on which they grow naturally, and which is most essential in aiding their artificial culture. It is only necessary to take the ripe seeds and press them with the forefinger and thumb against any smooth, healthy part of the bark of the bole or branch of an Apple, Pear, Thorn, Lime, or Mountain Ash tree, or even a Rose bush. In performing the operation, care should be taken to avoid rough, hardened parts of the bark, or chinks, and also not to cut the bark in order to place the seeds in the cut, which is so frequently done by those who are inexperienced in the matter. The viscous, gelatinous substance soon becomes hardened over the seeds, and binds them firmly to the points of attachment without the aid of any ligature. About a month or so after the time the seeds are placed on the trees, they begin to swell, and soon afterwards push out one or two rootlets, as the case may be, divergent from the point of attachment. They are slightly concave at their apex, and recurve backwards to seek the supporting body, which on reaching they adhere to like suckers. The other ends of these rootlets, being still adherent to the seed, form at this period of their growth a bow or irregular semicircle; the ends so attached soon afterwards leave the seed, grow erect, and become the plumules. During this process the sucker-like root which has rested on the surface is gradually pushing its way through the bark until it reaches the alburnum, where it feeds and nourishes the plumule, while the latter continues to elongate. These plants do not appear to have the power of penetrating farther into the woody system of the trees on which they prey than the alburnous wood, between which and the bast layer of the bark they continue ever afterwards to feed. Many of them, however, send out from the first point of attachment suckers, parallel to the axis of the supporting trees, which at some considerable distance burst through the bark and extend themselves into branches—a circumstance which was noticed long ago by Griffiths and others.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Tree Heights.—Can any of your readers tell me the greatest height that trees attain in the United Kingdom ? I remember a Spruce Fir in Studley Royal Park, Yorkshire, which was said to be 135 feet high. Do Poplars or Silver Firs ever exceed this ?—J. H. W. T., *Belmont, Carlow.*

Old False Acacia.—I am desirous of knowing whether the Acacia (Robinia Pseud Acacia), the oldest in Europe, formerly standing in the Jardin des Plantes is still in existence ; and if so, its present height and girth. Will any of your correspondents favour me with this information ?—JOHN W. FORD.

Ailantus odour.—The objection as to the loathsome smell of the Ailantus (see p. 116) is rather too far-fetched. The noble specimen of it to which I referred last week never gave us any inconvenience as to smell, though garden seats were continually under its fine long foliage, and in fine weather some of the family daily availed themselves of its agreeable shade.—D. CUNNINGHAM. [In warm countries, where the Ailantus flowers freely, we have noticed a disagreeable odour.]

Sequoia.—Many years ago, when this great tree was discovered in California, it was thought to be a new genus, and was named in America Washingtonia, and in England Wellingtonia. Eminent botanists subsequently discovered that it was not a new genus, but belonged to the genus Sequoia. The Americans gave up their name, and the last mentioned was generally adopted. But we still adhere to the wrong name.

GARDEN DESTROYERS.

ROSE SAWFLY.

TENTHREDO (EMPHYTUS) CINCTA.

Rose growers occasionally suffer from the operations of the larva of a sawfly, which lives in the interior of the shoots or branches of the Rose tree. We received some time ago numerous specimens from Kirkcudbrightshire, where they have often spoiled many a charming bouquet. The extremity of the shoot is first seen to languish, then it fades and withers. By-and-by the leaves below the bud droop in like manner in succession, one after another, beginning with those nearest the bud. The explanation of this is that the female of a sawfly, named Emphytus cincta, lays its eggs in a little chink, which it cuts in the young shoots while they are still herbaceous. The young grubs, as soon as they are hatched, work into the interior of the twig, eating towards the pith, in devouring which they spend the rest of their larval life, and they eat their way downwards, head foremost of course, so that the terminal shoot feels the effect of their presence first, and as the grub descends, each leaf suffers as it reaches the part of the pith connected therewith, until it gets below the leaves quite into the ligneous part of the branch, when there are no longer any external symptoms to reveal its presence, except perhaps that the whole branch is somewhat languishing, or may give way, being broken across by a gale of wind at the weakened part. Sometimes several individuals may be found at intervals one above the other in the same stem.

Rose Sawfly.

The larva in its earliest stage is faint greenish grey. After its first change of skin, the green on the back becomes darker and blacker, with a velvety sheen of colour in certain lights. There is a pale line along the side, bordering the green, which is darkest next that line, and the lower half of the body is pale yellowish green or greenish grey, with a slightly darker shade on the middle segments near the tracheæ. The head is pale yellowish green, with brown mouth, and black brown eyes. The possession of eyes, notwithstanding that it lives in the dark interior of the stem (a situation in which other insects often have them absent), may be accounted for by the universality of that character in the sawflies—a character which is the easiest token by which to distinguish the caterpillar of a sawfly from the caterpillar of a butterfly or moth; that of the sawfly always having eyes, that of the butterflies or moths never. There are other very important differences between the larvæ of these two orders, such as the head of the sawfly larva being rounded like a button, instead of continuous with the body, as in the Lepidopterous larvæ, and having always more than 16 (18 to 22) feet or substitutes for feet, while the Lepidopterous larvæ never have more than 16. But as to the feet it is often a little troublesome to count them, and as to the head the degree of roundness varies, while a glance will at once tell whether it has eyes or not, the eyes being little round dark specks standing conspicuous on its temples. It passes into the chrysalis in the stem, and spins a slight cocoon of white silk. The perfect sawfly is about four lines in length, somewhat elongate, black, with the legs ferruginous and a white band across the black abdomen. This white band, however, is sometimes more or less absent. We do not know whether it has been quite ascertained whether the transformations take place rapidly or slowly. This is of some importance, as, if they take place rapidly, there must be two broods in the year, for Boisduval records that the perfect female insect lays her eggs in the end of April or beginning of May, that he had young larvæ in May, and that some of his insects came out in May; while we had on the 5th of October last good sized larvæ not gone into chrysalis. If Boisduval's larvæ which were young in May, were of the same brood that came out in May, the transformation must have been very rapid; we rather incline to believe that it must be slow, and that the larva passes the summer in feeding and the winter in the chrysalis. Perhaps some of our readers may be able to supply us with information on this point.

The proper remedy for this species is to cut off the Rose shoots sufficiently far down, as soon as the buds begin to show symptoms of fading, and then to burn them. A. M.

THE KITCHEN GARDEN AT DRUMLANRIG.

The kitchen garden is a mile from the castle, and is entirely hidden from it. It is very flat, and I should imagine cold, being but little above the water level. The supply is chiefly required from August to December, and it needs the entire area to meet the demand during these four months. I never saw such breadths of Cauliflowers and Walcheren Broccoli; the latter seemed everywhere. An astonishing quantity of this is grown and snatched from the frost and stored in cellars, pits, or any dark cool place for winter supply. The early London Market Cauliflower is still the favourite. Peas reach to an extraordinary height and luxuriance at Drumlanrig. The Ne Plus Ultra is the favourite for the first crop (August), and the Mossy Podded Marrow, a Pea by no means common in the south, a veritable mossy pod, and Lynn's Dwarf Marrow are considered by Mr. Thomson as two of the finest late Peas. Potatoes too are grown in quantity. But perhaps the most striking thing in the kitchen garden was the quantity of salad. Border after border, and frame after frame, were full of most splendid crisp Lettuces. Many of these borders were to be framed over in winter. This plan is much better than moving the Lettuces into frames. The latter checks them, if ever so little, and a Lettuce checked is a Lettuce spoilt. By the former method they are kept on growing, and are crisp as glass. After growing all sorts, Paris White Cos, and All the Year Round are mostly grown for use up to the end of September. Beyond that period no Lettuce can upon the whole equal the Brown Cos. Take the Brown Cos for all in all we shall not easily find its like again.

The principal range of houses is 400 feet long and 18 feet wide, with a span-roof house at right angles at each end. These houses are built in the most substantial manner with hewn stone; the paths are formed of iron gratings, so that they are always clean and dry. One of the end houses is a greenhouse, the other a Camellia house and Orangery. The Orangery and Camellia house is 60 feet long; there is an Orchid house of similar length, a Peach house 100 feet long, and a Vinery 100 feet long. Behind these is another range of span-roofed houses—for Melons 80 feet, Figs 80 feet, Pines 170 feet, propagating house 40 feet. A third range follows of 100 feet for Vines, early Figs 40 feet, Passiflora edulis 30 feet, Pinery 30 feet. In the middle of this range comfortable lodgings for eighteen young men are arranged. Then follows a final range of 112 feet for Pine growing, store rooms for pots, soils, manures, Onions, stables, &c. Behind the main range there is also a range of workshops, seed-rooms, garden offices, carpenter's shops, sheds for potting, &c. In addition to these glass houses, there is about 1,000 feet run of pits and frames here, and another of 800 or more feet over at the flower garden, with quantities of moveable frames to grow and shelter the enormous quantities of plants required for the flower garden.

Everything about Drumlanrig bespeaks good management. Here, for instance, is a house of Camellias and Orange trees, the former already showing blossom (September) and the Oranges looking the pictures of health and cleanliness. They are the best dessert sorts; and these, with a number of Otaheite Oranges in pots, are designed to furnish eatable fruit with leaves attached to them for the dessert. In one of the stoves was a capital collection of fine-foliaged plants, such as Dracænas, Crotons, &c., for table decoration; and grand plants of Eucharis amazonica, and some of the larger Palms. Bouvardias were also grown in quantities for bouquet work, and a back wall of one house was covered with tree-like shoots of that most glorious of all winter-flowering plants—Euphorbia jacquiniæflora. In the Orchid houses were many fine specimens in capital health, the whole being backed up with a row of noble Palms, which gave the house a rich and fully furnished appearance.

As regards Pine-apples, it is impossible that plants could be cleaner, more robust, or healthy, or of "shows" more regular and deeply pipped, or of fruit more regularly swelled or ripened with a richer flavour or more delicious aroma than those grown here. The majority of Pines are fruited here within eighteen months of suckerhood, and some in less time. This, too, is not done by dozens, but by hundreds. House after house of fruiting plants, pit after pit of succession plants—are all alike good. There is no mystery here in reference to Pine growing. Cleanliness, liberal culture, care, skill, and keeping the roots pegging away and always in health, seem about the sum of the matter. Forethought is also needed to start the plants at the right time. I have never before seen such large fruit on relatively such small plants; not that the plants are small, but the fruit is large in proportion. Every leaf is tributary to the sturdiness of the stem, the stoutness of the stalk, or the height or diameter of the fully-swelled fruit. About one-half of the stock consists of Queens, and the other half of smooth-leaved Cayennes, with a few Charlotte Rothschilds and Prince Alberts.

The Vineries are equally well managed, the whole of them bearing the impress of the most skilful and successful treatment. The extraordinary excellence of the Seacliffe Black and other Grapes, as seen at Drumlanrig in September last, has been remarked upon in several journals. But the greatest triumph in Vine growing I have ever seen were two noble houses of young Vines, which had only been planted out of 6-inch pots in March 1870. A full crop was taken of supernumeraries in 1871. The rods and crops on the permanent Vines this year were quite unprecedented for their age. It was not merely that the wood was so strong, but it was hard as a deer's horn, with hardly a trace of pith to be seen. In the whole of my practice I have never met with two-year-old Vine wood of such strength and solidity. Such Vines would have carried any crop without flinching. Meanwhile, however, a terrible foe entered the gardens unnoticed. A Vine from an English nursery carried with it the Phylloxera vastatrix on its roots. It was not long till it found its way to these noble Vines. It spread rapidly, infesting a few, then more, increasing and multiplying by thousands. One Vine, several, then a whole house became infested. The fruit was nearly finished before its full power was developed. It infested the roots and swarmed in the larva state upon the leaves. Every precaution was taken to isolate the house from the others, and thus save the second. These precautions, however, failed. Both these houses of noble Vines have been burned, root and branch. The borders are being removed bodily and fresh borders formed. The houses are to be thoroughly cleansed and deodorised, and a fresh start made with clean Vines. No less radical measures seem strong enough to cope with this terrible foe; cure in bad cases is hopeless, for the insects peel the Vine roots bare of bark, and the Vine immediately begins to droop and die. Neither does there seem any limit to the power and rapidity of increase of this terrific pest. It seems to rise out of the earth in myriads. The dry soil around the roots becomes alive with it, and it swarms on the under sides of the leaves like bees. Pick off a thousand to-day and there seems two thousand more to-morrow. Mr. Dunn (now of Dalkeith) must have had a mild dose of this pest at Powerscourt to have been enabled to cure and extirpate it by scrubbing the roots with soap and water and replanting the Vines in, if I remember rightly, almost the old borders. Why the Vines at Drumlanrig had their roots skinned, and no dressing could have covered them with new bark. The soil, moreover, especially where it was driest inside the houses, was swarming with the insects. Mr. Thomson has found that the Phylloxera does not take to any other plant but the Grape Vine, and that a bath of cold water for forty-eight hours destroys it utterly.

From all I can learn it has not appeared anywhere else in Scotland; I have, however, heard of its appearance in several parts of England, and also in Ireland. It is known to be ravaging large districts on the continent, and it would be wise to plunge every Vine, come whence it may, into water for forty-eight hours before planting it in our vineries.

Returning to the forcing houses, I must add a sentence or two on the remarkably successful way in which Figs are grown under glass. They are trained on trellises, somewhat in the way of horizontal Pear trees; the branches being kept thin and closely spurred in. In this way they fruit wonderfully well, and a great many fruit are gathered off a small space. After growing a large collection, the following are considered best, alike for pots and planted out on trellises; viz., Brown Turkey, Harrison's Seedling, Raby Castle, and Grosse Verte.

D. T. Fish.

JAPANESE GARDENS.

Interesting as are the Japanese from many points of view, there is no branch in which they are more remarkable than in that of gardening. The fine collections of hardy plants introduced to Britain during the past dozen years sufficiently attest this, for it should be understood that many of the variegated and other curious forms are not such as "occur in nature," so to say, but such as have been carefully grown in Japanese gardens for ages. Even the literature of gardening would seem to be advanced to a high degree among the Japanese. When visiting Mr. Hogg in New York in 1870, we saw various remarkably well illustrated books on Japanese horticulture which that gentleman had brought from Japan. One was a book half a century old, exclusively devoted to variegated plants, and in it were figures of all variegated Japanese shrubs, which have been among the most admired novelties introduced to our gardens of late years. We shall, however, allow Mr. Fortune, the celebrated traveller, and who, as a gardener, is peculiarly fitted to speak on Japanese gardening, to say something on the subject.

> One marked feature of the people, both high and low, is a love for flowers. Almost every house which has any pretension to respectability has a flower-garden in the rear, oftentimes indeed small, but neatly arranged; this adds greatly to the comfort and happiness of the family. As the lower parts of the Japanese houses and shops are open both before and behind, I had peeps of the pretty little gardens as I passed along the streets; and wherever I observed one better than the rest I did not fail to pay it a visit. Everywhere the inhabitants received me most politely, and permitted me to examine their pet flowers and dwarf trees. Many of these places are exceedingly small, some not much larger than a good-sized dining-room; but the surface is rendered varied and pleasing by means of little mounds of turf, on which are planted dwarf trees kept clipped into fancy forms, and by miniature lakes, in which gold and siver fish and tortoises disport themselves. It is quite refreshing to the eye to look out from the houses upon these gardens. The plants generally met with in them were the following:—Cycas revoluta, Azaleas, the pretty little dwarf variegated Bamboo introduced by me into England from China, Pines, Junipers, Taxus, Podocarpus, Rhapis flabelliformis, and some Ferns. These gardens may be called the gardens of the respectable working classes.
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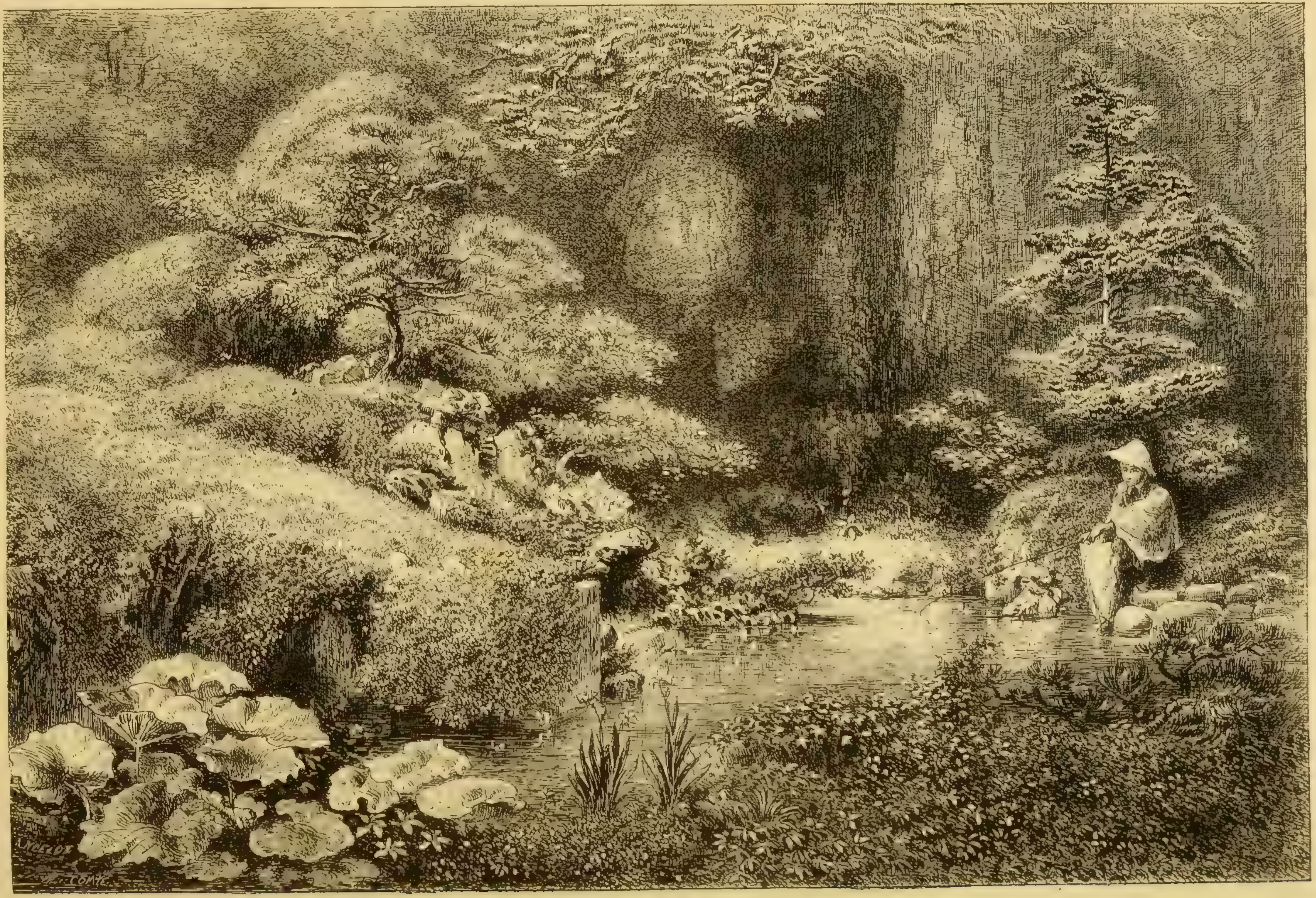
> Japanese gentlemen in Nagasaki, whose wealth enables them to follow out their favourite pursuits more extensively, have another class of gardens. These, although small according to our ideas, are still considerably larger than those of the working classes; many of



SCENE IN A JAPANESE GARDEN.

them are about a quarter of an acre in extent. They are generally turfed over; and, like the smaller ones, they are laid out with an undulating surface, some parts being formed into little mounds, while others are converted into lakes. In several of these places I met with Azaleas of extraordinary size—much larger than I have ever seen in China, or in any other part of the world, the London exhibitions not excepted. One I measured was no less than 40 feet in circumference! These plants are kept neatly nipped and clipped into a fine round form, perfectly flat upon the top, and look like dining-room tables. They must be gorgeous objects when in flower. Farfugium grande, and many other variegated plants still undescribed, were met with in these gardens, in addition to those I have named as being favourites with the lower orders.

THE KITCHEN GARDEN.

HINTS ON VEGETABLE CULTURE.

It will be generally admitted, I think, that there is no comparison between the crispness and flavour of vegetables grown quickly on land well manured and cultivated and the same kinds of vegetables stunted and starved on a poor, hungry, badly managed soil. Rapid growth in nearly all our culinary vegetables is essential to mild flavour, and next to a genial climate the manure supply is the most important. I am of opinion that a more extended use of artificial manure, such as guano and superphosphates, might be made with advantage. I do not, however, wish to be understood as recommending artificial fertilisers in preference to home-made manure, but only as aids in special cases; such as pushing on crops of early Turnips, Cauliflowers, &c., in ungenial seasons, or when from any cause there may be a scarcity of stable dung. The latter will of course beat all artificial fertilisers in the long run. But apropos of the manure supply, the great problem that now lies uppermost for solution, not only in our towns and villages, but also in every gentleman's country house is the "sewage question." There is a vast waste going on in every country mansion, which, if it could be utilized, would go a long way towards growing the supply of vegetables. If all the waste water from the laundry and other departments of a large establishment (highly charged with manurial matters in a liquid form) could be run into a tank in the kitchen garden, covered but ventilated, and the contents pumped up as required, what an opportunity would be given for increasing the value of our crops. Would it not be better to utilise it thus, than to run it into the lake to poison the fishes, or into some stagnant ditch to pollute the atmosphere?

I am aware that this question is beset with difficulties (the greatest of which perhaps is the apathy and prejudice of those more immediately concerned); but in many places the difficulties would not be insurmountable. In the drainage schemes of new mansions the thing might be carried out satisfactorily. There is no better deodoriser than fresh earth, or at least none so generally and readily available, and with a constantly increasing population, and a diminishing surface available for cultivation, it will ultimately be universally recognised that all waste matter must be utilised. Another important point in the production of good vegetables is the deep stirring of the soil. I can easily believe that much mischief may and probably has been done by injudicious subsoiling or trenching, by bringing up too much of the poor, hungry subsoil to the surface at once, more in fact than could be assimilated, or in any way rendered suitable for the full development of plant-life, but any man practically acquainted with the subject would hardly commit such an error. To deepen and improve poor, hungry land must be a work of time, and must be done with judgment, and be accompanied with liberal applications of manure, and if necessary deep draining should precede it. If treated well the land will respond in a liberal manner. The earth is man's great storehouse, but some judgment is required in extracting its treasures. Deep cultivation and plenty of manure are the only safeguards against adverse seasons. And if in addition to these we had the command of the sewage that is now in too many instances worse than wasted, to encourage our moisture-loving crops, an acre of land would produce double what it does under ordinary cropping, and we should not hear the complaint that Lettuces, Cauliflowers, Celery, &c., bolt before they are fit for use. When plants are supplied with sufficient food, and experience no check, their reproductive organs are more slowly developed, but when a plant is threatened by death from starvation (which generally happens on poor, hungry, badly cultivated land in dry seasons), its principal efforts seem directed towards rushing into flower, and so perpetuating itself by producing seed. As regards the vegetable kingdom this appears to be the general law of nature, and we take advantage of this, when, in order to induce a plant to flower, we starve it in a small pot, or for a time withhold water; this is also exhibited by the rapid way in which weeds run to seed in poor, whilst in good soils they attain an amazing development.

E. Hobday.

Early Potatoes.—In your number of November 16th, 1872, I find an interesting account of a way to raise early Potatoes cheaply and simply with the aid of "Frigi domo" as a covering or protector. Can you kindly inform me whether it is found to answer the purpose effectively? I should require the Frigi domo to be about 7 or 8 feet wide and 6 or 8 yards in length? W. [There is no doubt that the Frigi domo and frame plan of growing early Potatoes is a good one, for the same reason that Peaches can be grown on a south wall if shaded from frost when they cannot be grown anywhere else. Your correspondent must carry the plan out intelligently, however, as I have described, *i.e.*, he must economise to the utmost the sun's heat. Frigi domo will exclude about 6° or 8° of frost when dry. I have adopted this plan myself, and when I was at Drumlanrig with the late Mr. McIntosh we had hundreds of feet of such frames, only using wooden shutters instead of Frigi domo. They are, however, heavy, cumbersome, and expensive; 3 feet of leaves instead of drainage for bottom heat would be an advantage where they can be had.—J. S. W.]

Manuring.—A few days ago I visited a neighbour of mine—a gardener in a large private establishment, and when walking through the grounds of which he had charge, he remarked that a border which his men were manuring was rather poor, and that he was giving it a good dressing—a good barrowful of manure to every 9 square feet or so! I invited him to step into my place, in which my men were just doing the same thing on a border from which I had taken a crop of Radishes, Hyacinths, Kidney Beans, Gherkins, and Cabbage Plants, all during the past year, and which I was now preparing for Cauliflower. He did so, and the amount of manure I was applying astonished him. He said I was ruining my ground by manuring so heavily. I told him I could not take five crops off one piece of ground in twelve months with only a single application such as he called a "good dressing," whereas, by my system of manuring, I could do so with impunity. My border is 13 feet wide and 109 feet long; it is divided into 4 feet wide beds, with foot wide alleys between them, as indicated for the Cabbage plants. On each of these beds four good barrowfuls of manure are wheeled, so that, on the whole space, I had eighty-eight such heaps. By this means I can crop heavily and in quick succession, manuring only once in twelve months, and merely loosening or pointing over the soil for each successive crop. I manure heavily and crop heavily. If I manured lightly and cropped heavily, in two years my land would almost be past recovery. I may add that the Hyacinths are grown for the purpose of supplying cut bloom.—A Surrey Market Gardener.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Cabbage from Buds.—The *Pacific Rural Press* says: "Take a large head of Cabbage, strip off the outer leaves, and slip off the buds found at the base of the leaves. Take these buds and simply set them in rich earth. The result will be a fine growth of Cabbage plants, with heads larger and sounder than can be raised in the ordinary way."

Paraffin and Peas.—At this season of the year it may be of interest to many of our readers to know that before sowing their garden Peas if they mix about a table-spoonful of paraffin with a quart of Peas, turning them about so that all may get to taste of it, not a mouse will touch one of them, and the Peas will not be injured in the least by the paraffin.

The Late and Early Rose Potatoes.—The Late Rose is highly spoken of by American growers, who appear to have thoroughly tested it. Of the Early Rose, that excellent paper, the *Albany Country Gentleman*, says, "It has, in the short space of five years, been tested in almost every locality in our country, under the greatest possible diversity of soil, culture, and climate, resulting in such complete and uniform success as to win the appellation of being 'the Potato for the million.'"

A Fact for Broccoli Growers.—Our first sowing of Snow's Broccoli was made on the 16th of March, and the plants were finally planted out in the first week in June. The last sowing was made on the 6th of May; its produce was planted out on the 26th of July, and strange to say, the latest was fit for cutting the first, thus showing that only one sowing is needed instead of three or four, as teachers of such matters tell us.—Stamfordian.

THE GARDEN IN THE HOUSE.

ORCHIDS IN DWELLING ROOMS.

It is not sufficiently known to growers of Orchids how very long many of these plants will remain in flower, if they are brought into the drawing-room immediately after the blossom is expanded; while if allowed to remain in the damp air of the Orchid-house, they would soon lose their flowers. The reason is obvious to all who are acquainted with the habitats of these most lovely of all indoor plants. A great many of the finest genera—especially those from the New World—belong to regions which have alternately moist and dry seasons, each lasting many months. During the rainy period the pseudo-bulbs and leaves are formed, whilst in the succeeding dry season the flower-stems and flowers are thrown up from the completed bulbs. If, therefore, we remove the plants into the dry air of a dwelling-room, the conditions required by nature are fulfilled. Some of the noblest specimens will thus last in the most perfect state of bloom for many weeks and even for three or four months. Groups of lovely flowers have graced my library and drawing-room during the whole year—Lycastes, Cattleyas, Lælias, Zygopetalums, Odontoglots, Oncids, Trichopilias, Miltonias, Maxillarias, Pleiones, Cypripediums, &c., and at the present date (3rd February) the following are in the greatest perfection, viz.,—Miltonia spectabilis (14th week) M. Morelliana, M. Clowesii, Pleione lagenaria, Odontoglossum nebulosum candidum, O. grande, Zygopetalum crinitum, a grand spike; Cypripedium insigne and several others having had their day have just been removed. Vanda teres lasted 17 weeks in perfection. They seem also not to suffer from a low temperature, 38° and 40° during the night at present. Moist air and sunshine, even in winter, hasten the decay of the flowers. I have put a bell-glass over some dwarf and delicate specimens, such as the Pleiones, which is some protection from dust, as well as from the action of air in rooms much used. It may here be mentioned that if cut flowers of valuable kinds are covered by a bell-glass, they will last in a good state more than three times as long as when they are exposed to the action of air. I should add that the roots of Orchids, whether in pots or oak baskets, require very careful attention. I either moisten or plunge the roots occasionally in tepid water. The above remarks apply more especially to such species as have their roots covered up by the mass of sphagnum and crocks in pots; those whose roots are aerial, being suspended on blocks, of course require the moist air of the Orchid-house. F. W. Cooke.

Glen Andred.

Ornamental Pot-covers.—Messrs. Hooper & Co., of Covent Garden, have sent us a modification of the common expanding pot-cover of which we now give a representation. It differs from the old and well-known article only in being clad with artificial Ivy, Vines, or other suitable plants. The addition of these makes it much more presentable than it hitherto has been.

Ornamental pot-cover.

NOTES AND QUESTIONS ON THE GARDEN IN THE HOUSE.

Christmas Flowers in New York.—At Christmas, New Year, and Easter there is quite a rage for flowers of every description in New York. Prices then rise very high, such as Camellias, 50 dollars per 100; Tuberoses, 10 dollars per 100, and Rosebuds, 5 to 8 dollars. These are trade rates. Consumers have to pay higher—Camellias, 1 dollar each; Roses, 25 cents; Tuberoses, 25 cents; Carnations, 15 cents; Violets, 4 cents. When the holidays are past, Camellias fall to 6 dollars per 100; Carnations, 1 dollar; Roses, 2 to 3 dollars, and all others in proportion.—*Horticulturist.*

Lomatia filicifolia.—This is an elegant greenhouse shrub, of compact habit, bearing numerous finely-cut leaves of good substance, and of a dark fresh green colour. These leaves are admirably adapted as a substitute for Fern, and possess the additional advantage of lasting much longer. I cut a couple of them six weeks ago, and to-day they are as fresh as ever, after having done duty with at least a dozen fresh arrangements of flowers. These leaves are invaluable for button-hole bouquets or for other purposes where durability is desired.—F. W. B.

THE FRUIT GARDEN.

PLANTING.

The ground has been well prepared; the manure, the soil, the elements which compose them, are all about to work together, to combine, and to act, and the trees are to find for their roots a comfortable bed. Do not be in too great a hurry; let the soil settle down for a month at least, and do not plant until then. Make your arrangements, however, so that the planting may not take place later than the middle of March, but before that date, if convenient. If the soil is not ready by that time, and if the ground is not in proper condition, it will be better to defer planting until autumn. It is possible this may not be agreeable, if you are impatient and eager to begin; but you will find it more prudent. Even though the soil should have sunk during the summer months, do not be uneasy about it; on the contrary, this will be rather the better for the trees which will be planted in it. We know very well, and you have no doubt often heard it said, that one may plant at any time of the year, and do so successfully; but these unseasonable plantings require precaution, and often a considerable amount of it. To enter into particulars on this subject here would merely swell the size of these notes without enabling us to gain any time by it. We are only speaking, observe, of woody plants, and particularly of fruit-trees.

Well, you have bought and brought home your trees; if your planting is of any extent, it will last for some time, and you must take care that during that time the roots do not suffer from exposure. Put them "by the heels" in a trench near the planting ground, not burying them very deep, but earthing them up so as to cover the necks well. Group your trees according to their kinds and forms; have some care for all these little details, untie your plants bundle by bundle, and carefully place the proper label on each kind. These may appear too minute precautions; but they will, in the first place, facilitate the work, and, in the second, they will prevent your eating one kind of fruit under the impression that you are eating another, and they will also save you from being bewildered in a maze of mistakes which careless labelling is sure to lead to, and which it is not easy to correct afterwards.

In the next place, you have to provide a position for each tree. The ground having been already fully prepared, all you have to do is to make holes just large enough to contain all the roots easily; and, although the soil has been manured, you may throw into the bottom of each hole a little more decomposed manure, and cover it with a few inches of soil. In the meantime, moreover, the trees should have been trimmed—that is, have had the roots pruned a little, and the unsound parts removed. Then dip the roots in water, or, if their size will not allow of this, water them with a rose watering-pot; immediately afterwards cover them with well-pulverised soil.

Arrange the trees with taste and regularity, and do not place them at random, one standing to the right and another to the left. Generally, in order to have two guiding points, a tree is planted at each end of the line. That is one way; but still there is need of great care and a good eye. It is better to use a surer method: lay a cord from one end to the other; as, in digging the holes, the soil is thrown out on each side, the cord does not meet with any obstacle, and shows accurately the proper place for each tree; and, although it may not be so flattering to one's vanity as to be able to do it by the eye alone, it is sure to be correct, and that is the main thing. It is needless to say that two men at least are required to plant a tree—one to hold it in its place, and the other to cover the roots with soil. If you plant wall-trees, let the graft be turned as much as possible towards the wall, so that the wound which was made in cutting off the heel may be sheltered from the sun; these wounds, moreover, are never very pretty things to look at. But, in the first and principal place, arrange the tree so that the spurs which you will have to prune by-and-by may be conveniently placed.

In planting, let the graft always be some inches above the surface, especially in the case of Apples grafted on Doucin and Paradise, and the colder your soil is the more closely you must look to this. If buried, the graft might root and thus your object would be defeated. The digging and the manuring, and even the space which the roots occupy, will all have raised the ground somewhat; but that is only temporary; a subsidence will gradually take place, so that after some time the tree will be in a hollow, while if you have calculated and made allowance beforehand for the depression which will follow, your tree will settle to just where it ought to be, that is, to the level of the surrounding ground. If the soil is dry, as soon as the planting is finished, water well. In order to complete the work properly, you will, about the end of March, cover the ground about the bottom of the stems with a couple of inches of half-decomposed manure: that which has been already used for hot-beds will be very suitable for this purpose. There is one more operation very simple, and at the same time very beneficial to trees newly planted, and which have already attained a certain degree of strength; that is to cover the stem and all the branches with a coating of cow-dung, doing this always about the end of March. Trees suffer very much from the sun during the first year after they are planted, and this is an excellent method of protecting them. The cow-dung adheres firmly to the bark; if, however, after heavy rains, it should happen to come off in spots, repeat the operation; it is a necessary one, and even indispensable for wall-trees. We have recommended it for trees that are already mature, but even young trees will be none the worse for it. It is in consequence of slovenly planting and not protecting the trees during the first year, that some persons deny the possibility of succeeding in planting old specimens. It would be well to go a little further and protect the place of union of the stock and scion still better from the heat of the sun by placing before it either a tile, or a board, or some other screen. In the course of the summer, during droughts, water copiously but not often: for trees properly planted and covered about the roots, a weekly watering will be sufficient in dry soils, and two or three per month in cool, moist localities.

After the first year, trees seldom require so much attention; it will be well, however, to give the roots a fresh mulching every spring, after forking in the mulching of the previous year.

Some persons disapprove altogether of the culture of any kind of vegetables in the beds where fruit-trees are planted; but we consider the prohibition too exclusive, especially while the trees are young and their roots do not require a great deal of nutriment. However, in every case we must act with discretion, and not plant anything that will exhaust the soil or remain long in it; but such things as a few salads, Lettuces, early Potatoes, &c., which will always be a nice addition to your crop of fruit. F. Jamin.

FIGS.

The natural habit of the Fig (which comes to us from the south of Europe) is that of a low-spreading tree. Along the south coast of England, especially about Arundel and Worthing, Fig trees grow and fruit abundantly, planted and treated in the same way as we do our standard Apples. Generally, however, throughout the middle and southern portions of England it is only against walls that Figs can be or are cultivated in the open air; and when sufficient attention is paid to them they succeed tolerably well. It may be remarked that Figs always seem to succeed best in districts bordering on the sea, so that it is to be assumed that moist sea air is agreeable to them. At Cullen House, Banffshire, which is situate on the sea coast, beautiful crops of Figs have been obtained; but this is the most northern locality where we have heard of Figs succeeding. The Fig is by no means a popular or a relished fruit in this country. Some are exceedingly fond of them, whilst others quite as thoroughly detest them. Very few like them at first; they are what is termed sickly, but by degrees, by tasting thoroughly well-ripened fruits, most people become fond of them. There is wonderful variety in their flavour, even when fully and perfectly ripened, and a badly ripened Fig is at all times detestable. The soil most suited for the cultivation of the Fig is that termed calcareous, with a chalky or gravelly subsoil. This is the sort of soil in which they grow in their native country, as well as that about Arundel and Worthing. When cultivated in pots, a soil a little richer must be used. Of the varieties of Figs most suited for cultivation, the following are recommended:—

White Marseilles or White Genoa.—Fruit of medium size, roundish, very prominently marked with longitudinal ribs; skin green, changing to a paler green when ripe; flesh whitish or opaline, rich and sweet. This variety is very prolific, and succeeds well as an open standard at Arundel and Worthing, and against walls in the neighbourhood of London and the midland counties. It is well adapted also for cultivation under glass and in pots.

Brown Turkey, or Lee's Perpetual.—Fruit of medium size, pyriform; skin brownish red; flesh dull red; a rich variety, very prolific, and one which succeeds well against walls in the south and middle districts, and partially so as an open standard. It is well adapted for cultivation under glass, and it is the variety most commonly to be met with. It forces well, and although not of extra high flavour is one of the safest varieties to cultivate. The finest tree of this variety with which we are acquainted is at Syon House, Brentford.

Brunswick.—Fruit large, pyriform, slightly curved; skin greenish yellow, shading off to dark brown on the sunny side. Flesh pale, slightly tinged with pale rose near the centre; when well ripened, rich and luscious. This variety is one held in much repute, and it is a kind everywhere in cultivation; it succeeds well against open walls to the south of London, but only partially so farther north. It does not force so well as the two preceding, but is excellent for a late house. The leaves are deeply cut, and it is a very robust grower. Castle Kennedy resembles this, but it is a much more shy grower.

De la Madeleine Angelique.—Fruit of medium size, round; skin pale straw colour, pubescent; flesh white or opaline, moderately rich. This is frequently confounded with White Marseilles, but it is totally distinct from that variety. This is the earliest variety of Fig, and is worthy of cultivation on that account. It is prolific, and will ripen in the open air. It is not as yet in common cultivation in this country, but it is highly recommended.

Grosse Monstrueuse de Lipari.—Fruit large, turbinate; skin brownish red. Flesh dull red, moderately rich. This also is a very early variety, prolific, and one which forces well. It is recommended for cultivation against walls and for early crops.

Bourjassotte Grise.—Fruit of medium size, turbinate, almost oblate. Skin of a dull plum colour with a thick bloom. Flesh of a deep dark red colour, thick, rich, and excellent. This is the richest flavoured, and the most constantly good Fig in cultivation, being high flavoured even under the most adverse circumstances. It is recommended especially for pot culture and for cultivation under glass. The largest plant we have ever seen of it is at Carton, the seat of the Duke of Leinster, Maynooth.

Grosse Verte.—Fruit very large, obovate. Skin deep green, changing to greenish-yellow when ripe. Flesh deep red, with thick flesh, very rich and excellent. This variety is late, and requires a considerable amount of heat to ripen it thoroughly, otherwise it is apt to crack. It is recommended more especially for pot culture.

Royal Vineyard.—Fruit above medium size, of a long pyriform shape; skin reddish-brown, somewhat resembling the Brown Turkey. Flesh dull red, exceedingly rich and excellent. A very prolific and good variety for general cultivation under glass.

White Ischia.—Fruit small, roundish, with a long stalk. Skin pale greenish-yellow, tinged with dirty brown. Flesh red, rich, and highly flavoured when well ripened. Immense cropper, and a very useful variety, which will continue bearing fruit and ripening it until after Christmas. Rather variable at times, and requires heat. It is best adapted for pot culture.

Col di Signora Bianca.—Fruit large, pyriform, with rather a long neck and very distinctly marked with longitudinal ribs. Skin pale green, changing to almost white when ripe, very thick. Flesh deep red, thick, rich, and syrupy. Very excellent; requires a good deal of heat to ripen thoroughly. Recommended for pot culture.

The above varieties represent all those most worthy of cultivation, whether in the open air, against walls, planted out under glass, or in pots. For simplification they may be classed thus:

For Open-air Standards.—White Marseilles, De la Madeleine, and Brown Turkey.

For Growing against Walls.—Brown Turkey, White Marseilles, Brunswick, De la Madeleine, and Grosse Monstrueuse de Lipari.

For Planting-out under Glass.—Bourjassotte Grise (A 1), Royal Vineyard, Brown Turkey, White Marseilles, and De la Madeleine.

For Cultivation in Pots.—De la Madeleine (very early), White Marseilles, Royal Vineyard, Grosse Monstrueuse de Lipari (early), Grosse Verte, Bourjassotte Grise, Col di Signora Bianca, and White Ischia.

Figs are of very easy cultivation. What they delight in whilst growing is plenty of moisture and heat; and to ripen the fruit perfectly they should have the best sunny exposure out of doors or else be grown in an orchard-house.—*New Practical Gardener.*

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Rabbits *v.* Fruit Trees.—The application of blood to the stems of fruit trees has been under trial for several years, and so far, when well applied, has been successful in repelling rabbits.

A Cranberry Crop.—Three thousand bushels were recently picked from 3¼ acres of land near Berlin, Wisconsin. From 40 acres on the Carey Marsh, 3,200 barrels were picked, worth 3 dollars per bushel. One cultivator employed 1,400 hands this season in picking Cranberries.—*Horticulturist.*

Large Pears.—It appears to be proved that Pear-growers are able to produce fruits of abnormal size by supporting the growing Pear from underneath, instead of allowing it to hang on the peduncle. M. Decaisne has seen Poires de Livre 2¼ lbs., Morceau 1½ lb., and a Chaumontel of 1¾ lb. weight, produced in this way.

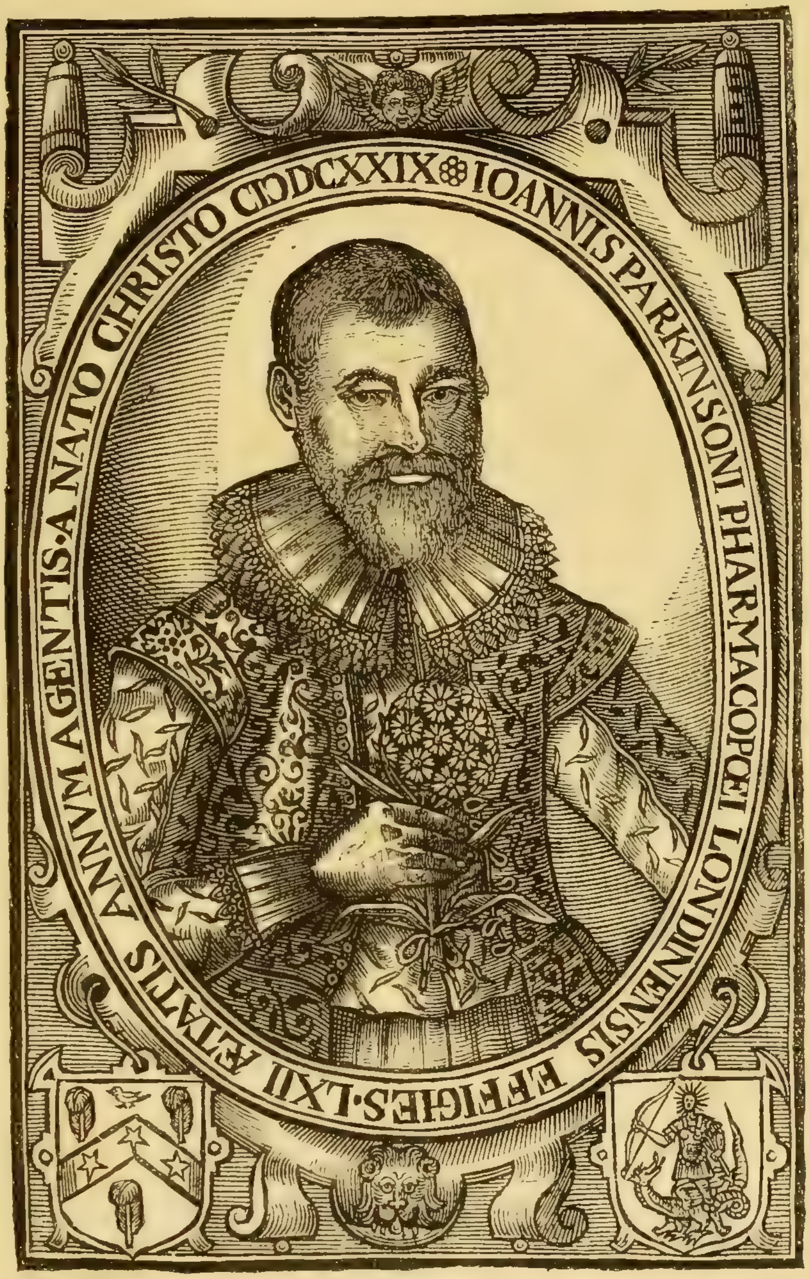
Keeping Apples.—In America, where the cold is so severe in winter, the *Tribune* speaks thus of keeping fruit: The essential conditions for preserving Apples or other fruits in the most perfect state for as long a time as possible, are, 1. Coolness and evenness of temperature. A uniform temperature of 36° is the most favourable, and from this there should be no greater variation than 4°. After steady cold weather sets in, this degree of coolness is easily maintained; but, prior to that season, it requires considerable attention. Whenever the temperature in the fruit house rises above 40° in the day time, all ventilators have to be closed until evening, when they are opened again and left so during the night. 2. Dryness of the atmosphere without desiccation. Exclusion of light is desirable, but not absolutely necessary.

GARDEN PORTRAIT GALLERY.

JOHN PARKINSON.

John Parkinson, whose portrait, a facsimile of that found in one of his works, is here given, was one of our earlier botanical and horticultural writers. Comparatively little is known of him, the account given of him by Pulteney being extremely meagre. From it, however, we learn that he was bred an apothecary and lived in London; that he was contemporary with Gerarde and Lobel during the latter part of their lives, and survived Johnson, the editor of Gerarde, for several years. His contemporaries speak of him as a man of eminence in his profession, and as possessing a garden (we learn from his "Theatrum Botanicum" that it was situated in Long Acre) which was well stocked with varieties. He was appointed apothecary to James I., and filled the post of "King's Herbarist" to Chas. I. The date of his death is uncertain; his "Theatrum" was published in 1640, when he must have been seventy-three years of age.

This was Parkinson's most important work, and seems to have occupied him many years; during its compilation he encountered many obstacles, one of which, according to Pulteney, was the necessity of having all the figures, although copies of others already published, cut anew for this book. But his earlier work, "Paradisus Terrestris" (of which two editions appeared, from the earlier of which our portrait is taken), is in many respects a more interesting volume, giving us, as it does, a good general view of what English gardening was in the seventeenth century. The plates represent many of the old-fashioned flowers which are now lost to our gardens, such as many of the varieties of Daffodils (of which there were then "almost an hundred sorts"), of Anemones ("or Windeflowers so pleasant and so delightsome flowers, that the sight of them doth enforce an earnest longing desire in the minde of any one to be a possessour of some of them at the least"), of Tulips ("which are the pride of delight"), and of all kinds of Stocks, Daisies, Violets, Carnations, Primroses, Violets, Marigolds, Bachelor's Buttons, Columbines, and the like. Indeed, the introductory chapters on "the ordering of the Garden of Pleasure" are delightful reading, not only from their quaint phraseology, but for the genuine love of his subject which the author manifests throughout. His eulogies upon each plant as it comes under notice are most delightful; but his favourites appear to have been flowers of the Pink tribe. "What shall I say," he asks, "to the Queene of delight and of flowers, Carnations and Gilleflowers, whose bravery, variety, and sweete smell joyned together, tyeth every one's affection, with great earnestnesse, both to like and to have them?" Of these no less than fifty are enumerated, under names, many of which sound somewhat strange to modern ears, as the Hulo, the Savadge, the Chrystall, the Gran Père, the Cambersine, the Granade, the lustie Gallant, the "Fair Maid of Kent or Ruffling Robin," and so on. In our portrait he has in his hand the scarlet Lychnis (L. Chalcedonica) then known as "Nonesuch," or "Flower of Bristow," or "Constantinople," of which a double variety was at that time in cultivation, a "glorious flower as rare as it is beautifull," which, "for his bravery doth well deserve a master of account that will take care to keepe and preserve it." We are tempted to go on quoting from the delightful old book, but the want of space compels us to bring our brief remarks to a close.


IOANNIS PARKINSONI PHARMACOPŒI LONDINENSIS EFFIGIES·LXII ÆTATIS ANNVM AGENTIS·A NATO CHRISTO CIↃDCXXIX

John Parkinson.

Betel Nut.—There is a fascination in the Betel nut more extraordinary than in the tobacco passion. The consumption of the latter in chewing alone, in the United States, is a modern phenomenon. An inveterate chewer may have moral resolution enough to break off the habit, though it rarely happens that an effort is made to do so, as an apology is found for continuing a practice that is positively destroying the foundations of health. Once addicted to chewing tobacco, to abandon it is an achievement few have the happiness to perform, notwithstanding the melancholy mortality of men in the meridian of life who are constantly being destroyed by the subtle influence of that strange plant on the nervous system. Thus sudden palsy of the heart, palsy of a limb, palsy of one-half the tongue, and even instantaneous death, are traceable by physicians to excessive use of tobacco. But the vice of Betel nut chewing is still more remarkable. When the habit is established there seems no retreat. The victim wears out his teeth, gums, and digestion, and dies with an unsatisfied longing for another quid. Betel nut trees thrive in most parts of tropical India, the Indian Archipelago, and the Philippine Islands. They grow up gracefully about 30 feet, rarely more than 8 inches in diameter. It is an Areca catechu. Penang is the universal name of the nut in those places where it is produced; hence Pulo Penang means a Betel nut island. At six years of age, the tree commences bearing nuts of the size of a small pullet's egg, of a bright yellow colour, enclosed in a husk similar to that of the cocoa-nut; within is a spherical nut, very much like a nutmeg. Broken, a bit of it is wrapped up with a piece of unslaked lime in a peculiar leaf, the Siri betelpiper, extensively cultivated for that purpose. The gums and mucous membrane of the mouth are quickly stained a brick-red; the teeth crumble to a level with the gums; and in that condition an inveterate Betel-chewer is wretched without a supply. There are large plantations of Betel nut trees in Java to meet the demand for home consumption and in distant provinces. To augment the pleasure, those who can afford it add tobacco to the lime.

SOILS, MANURES, &c.

APPLICATION OF MINERAL MANURE TO HORTICULTURE.

Many horticulturists and writers on plants believe that it is impossible to grow plants in a sterile soil by means of artificial food composed of mineral substances dissolved in water. My aim is to prove by experiments, the results of which I shall presently describe, that:—(1.) Nitrates or nitrites are naturally formed in soil containing organic vegetable matter when in contact with air. (2.) That it is possible to feed plants with solutions of mineral compounds suitably prepared, so that the plants receive from these solutions the mineral constituents they require, and may thus grow more vigorously even in pure sand than in the best garden mould.

This opinion was put forth in 1856 by Boussingault while experimenting on the growth of the Helianthus (Sunflower). The eminent *savant* then said that the plant assimilates the mineral substances, and need not necessarily be placed in a soil containing decaying organic matter. And this opinion is also confirmed by the experiments of G. Ville, which prove the importance of chemical manures in agriculture. I have utilised the opinions of Boussingault, Millon, and Schœnbein on the natural production of the oxygen compounds of nitrogen, and at the same time have somewhat modified them. I first studied the natural conditions of the formation of nitrates in arable soil, without the intervention of ammonia, simply from the elements of air and the reduction of these nitrates by humus. I applied Schœnbein's reagent (solution of iodised starch acidulated with sulphuric acid), which strikes a blue colour in the presence of nitrates. By the aid of this reagent I ascertained the following facts:—

When arable soil or garden mould is well washed in a displacing apparatus with pure distilled water, that fluid always exhibits the presence of nitrites. It is, however, necessary to use—for the complete removal of the nitrites from the soil—about twelve times the quantity by weight of distilled water to the weight of the soil experimented upon. The soil thus treated having been again dried, yields, after a short time, nitrites, as indicated by Schœnbein's test in the water employed a second time for exhausting the soil. Sandy soils, and all those which do not effervesce when treated with acids, do not recover nitrites after being dried unless carbonate of lime is added, and the soil then moistened with water and again dried, and lastly washed with distilled water, which then exhibits the reaction for nitrites.

When a solution of the nitrates of potassa and ammonia at 5-1000 is made to pass through the arable soil or garden-mould previously well washed with water, the soils being placed in a displacement apparatus, it will be found (as I also ascertained) that the nitrates are retained in the soil. 2½ lbs. of the soils—which require to be moistened with about half their weight of water—retain about four-fifths of the soluble salts contained in the first litre (1 7-10ths of a pint) of the saline solution at 5-1000, which is poured on to the soils. Nitrate of ammonia is retained by the soil in larger proportion than nitrate of potassa. The alkaline nitrates are in 24 hours reduced to nitrates when in contact with dead leaves, straw, or humus. The reduction is so marked that when dead leaves are washed with distilled water, the leaves distinctly exhibit, with Schœnbein's reagent, the presence of nitrites, due to the nitrates naturally present in the well-water of Paris. These facts appear to me to lead to the following conclusions:—

(1). Soils containing humus and lime determine, while drying, the combination of the elements of the air, without any intervention of ammonia, so that either nitric or nitrous acids are formed, which are at once fixed by the lime. This explains, not only the sterility of soils void of lime and of peat bogs, but also the utility of liming the soils.

(2). The nitrate of ammonia contained in rain-water and in dew (Millon and Schœnbein) is retained by the humus in the upper layer of the soil, with the nitrites constantly formed in the well aerated and limed soil, according to the conditions of the atmospheric moisture or dryness.

(3). This constant formation and renovation of the oxygen compounds of nitrogen in soil containing lime and humus is a fact of great importance, which explains the exceptional fertility of the soil in alternate wet and dry weather, when frequent showers of rain are followed by great heat, as was the case in 1872 (in France, at least). It also, in connection with the great affinity of the humus for soluble salts, more especially ammoniacal, accounts for the accumulation of fertilising principles in fallow lands, and at the same time shows the utility of mechanical operations in the soil, such as ploughing, digging, harrowing, &c., by which means contact with the air is increased and free access of air promoted. I have tried to elucidate these theories by a series of different horticultural experiments, specimens of which I send to the Academy.

I. Comparison between plants grown in sand and in garden mould. The plants placed in sand have been supplied every week, in addition to receiving ordinary water, with a solution of some grains of mineral manure dissolved in water. The plants placed in garden-mould have only had common water. The pots were placed on saucers, in order to prevent loss of soluble salts. I exhibit, as specimens of this experiment, two plants of the Pelargonium zonale and two of the Agave corniculata, which in April last were all in the same stage of development. The Pelargonium grown in the sand is four times as much developed as that grown in the garden-mould, and has been constantly in bloom during the summer; the Agave grown in the sand is twice as large as that grown in the garden-mould.

II. Plants grown only in sand: but some watered with common water only, others with the mineral solution, once a week.—I exhibit here, as specimens, several Arum italicum, and state that I have, during the summer, made a large number of similar experiments with plants belonging to different natural families, such as Begonias, Tradescantias, Veronicas, &c. The plants grown without the addition of mineral manure are either dead or drooping, while those raised with the addition of that manure have grown magnificently.

III. Plants grown only in garden mould, to some of which only common water has been given; and to others, in addition to that fluid, a quantity of the mineral manure solution has been supplied weekly. As a specimen of the result of this experiment, I exhibit two specimens of Sedum acre, the plant which has received weekly 3 grains of the mineral manure solution having grown twice as much as the other.

IV. Plants which have remained for two consecutive years in the same soil in pots. These, as far as they have been treated with my mineral manure, have grown so well that their size is altogether out of proportion with the pots which contain them. As samples, I exhibit an Aspidistra elatior and an Arum esculentum.

The mineral manure which I use is made up according to the results of elementary analysis of wheat and of farm-yard manure, taking into consideration that the arable soil, containing organic matter, acts constantly as a nitre-bed, and thus fixes the elements of the air in combination. The manure consists of the following ingredients:—

Nitrate of ammonia	400	parts.
Nitrate of potassa	250	„
Biphosphate of ammonia	200	„
Chloride of ammonium	50	„
Sulphate of lime (gypsum)	60	„
Sulphate of iron	40	„
	1,000	

The salts should be pulverised separately, and then intimately mixed. I apply this manure in the following manner:—Dissolve 62 grains in a litre (1 7-10ths pint) of water; give to the plants, according to their state of development, every week from 387½ to 975 grains of this solution (equal to from 1½ to 9 grains of the salt in solid state).

Conclusions:—(1.) Plants can be fed by means of artificially-made mineral solutions. (2.) Horticulture may greatly profit by this mode of growing plants, because it renders repotting unnecessary, and because the nature of the soil becomes a matter of entire indifference, provided it offers to the plants a proper and sufficient permeable hold; while, lastly, the plants can be fed at will and when most convenient.—*J. Jeannel, in "Comptes Rendus."*

THE HOUSEHOLD.

ORANGES.

THE Orange is undoubtedly our winter fruit *par excellence*, as it is indeed our only fruit when Apples and Pears are going out, and Gooseberries and Cherries have not yet come in. Orange marmalade and Orange brandy are well-known British institutions, but they are made with the Seville or bitter Orange. It is a mistake, however, to suppose that its more luscious sister, the sweet Orange, is only fit to be shown at dessert, or sucked by schoolboys and the pit audience of second-rate theatres. Even in the early winter months, when the Oranges which reach this country are scarcely ripe enough to have any sweetness at all, they can be turned to good account in the preparation of several sweet dishes, most of which present the seldom attained combination of excellence and cheapness. The former quality depends a great deal on the preliminary process of peeling. *Peler à vif*, as it is called in French, consists in removing the whole of the skin, including the thin pellicle which covers the "quarters" of the Orange, then each Orange should be cored as Apples are cored. A very sharp knife should be used, and the corer ought by no means to be blunt. Before peeling an Orange it should be washed clean, and the *zeste*, or yellow rind, should be pared off as thinly as possible, to be used as directed further on. This process of peeling is of great importance; and need I again repeat in this paper that the cook's hands should be scrupulously clean?

The simplest of all the dishes made with Oranges is a salad which in its primitive form consists of Oranges sliced unpeeled, with some sugar strewed over them, and a dash of brandy or rum. To proceed artistically, the way to make a salad of Oranges would be as follows: Peel *à vif* half a dozen Oranges, cut them in slices a quarter of an inch thick, remove the pips and the pith in the centre of each slice; put them into a deep dish with the juice produced in the process of peeling, and the thin yellow rind of one Orange, strew plenty of powdered loaf sugar over, and keep them covered till wanted. At the time of serving, arrange the slices in a glass dish in a circle, and overlapping each other; add a wineglassful of Cognac or of rum to the syrup left in the other dish, strain the whole over the salad, and serve. Any kind of liqueur, such as Maraschino, Curaçao, &c., may be substituted for the Cognac, or sherry may be used instead. Another form consists in serving the Oranges whole (peeled and cored). They should be kept in this case a little longer with the sugar, and the thin rind of one Orange having been infused in the juice of another with the brandy or liqueur, the whole should be strained over the Oranges piled up on a glass dish.

The next preparation that suggests itself is a Compôte of Oranges, which is made thus. Put a handful of loaf sugar to boil with a gill of water in a saucepan; when it boils add the rind of three Oranges minced finely or cut into very narrow strips. Let the whole boil five minutes, add a liqueur-glass of brandy, and pour the syrup (hot) over half a dozen of whole Oranges, peeled and cored—or cut up in any form you like. The Oranges should be left in a basin with the syrup, till quite cold; then piled up on a dish, and served.

Orange tartlets are made by lining patty pans with sweet short paste; these are filled with uncooked rice, and baked to a light colour; then, the rice being removed, each tartlet is furnished with a small quantity of compôte of Oranges, cut up small, made as above. Orange tartlets are usually served cold, but they may be made hot by being put into the oven for a short time, after they have been filled with the compôte. The following is another form; the shell of paste is made the same in diameter as the Oranges about to be used; these, after being peeled and cored, are cut into halves lengthwise, and treated with the syrup as above; then half an Orange, with the convex side uppermost, is placed on each tartlet, and a small quantity of the syrup is poured over. This variety of Orange tartlet can be ornamented with candied Cherries, Angelica, pistachio nuts, or almonds—the two last duly blanched of course. A compôte of Oranges—with the brandy, and even the thin rind, left out or not, as the case may be—served in conjunction with a pudding of a farinaceous nature, such as rice, tapioca, semolina, &c., or with a custard pudding, is always a welcome sweet with children, and I will venture to say as wholesome as it is welcome.

Oranges can be combined with rice in one dish, and Oranges *au riz meringuées*, homely as some may account the dish to be, is a preparation which will commend itself to parents and guardians, as well as to their charges. The way to proceed is this: Pick and wash a couple of handfuls of rice, put them into a saucepan with a pint of milk or more, a little sugar, and the thin rind of two Oranges; let the whole simmer until the rice is quite done and has absorbed the whole of the milk. Remove the Orange rind, and spread out the rice flat on a dish. When it has cooled, dispose on it a compôte of Oranges cut in halves, and pour the juice over; then beat up to a stiff froth the whites of three or four eggs, with a little powdered sugar; pile up the froth over the rice and Oranges, so as completely to cover them; put the dish into the oven until the top of it is browned slightly, and serve immediately. This dish can be modified in various ways, as *e.g.*, by adding yolks of eggs to the rice before it has cooled, by flavouring it with vanilla, by preparing it with cream as for *riz à l'Impératrice*.

Fritters are too well known a preparation of Oranges to need but a passing notice. The best formula to my mind is that which directs that the pieces of Orange should lie in a marinade of rum and sugar, before being dipped in batter and fried. In the preparation of fritters the peeling process plays an important part.

Jellies, creams, and custards *à l'orange*, being flavoured rather than made with Oranges, do not come within my present purpose; but one variety of Orange jelly I will describe. It is made in the following fashion: Divide two or three Oranges into "quarters," remove with a sharp knife every particle of skin of any sort from each quarter, and cut it in three or four pieces. Make in the usual way a jelly flavoured with Oranges, put into it the pieces of Oranges, and place it on ice to set. This preparation is an agreeable change from the ordinary Orange jelly, and is, so to speak, the first step towards learning to make that delectable dish—a Chartreuse of Oranges. To make this, procure two plain moulds, one exceeding the other in diameter by about 1½ inch. Make an ordinary Orange jelly, pour a little of it into the larger mould, place in it a layer of Orange quarters, freed from every vestige of skin of any kind; pour over them just enough jelly to get a smooth surface. Place the mould on ice for the jelly to set. When it is quite firm put the smaller mould inside the large one, taking care so to place it that the vacant space between the two moulds be of the same width all round. In this vacant space dispose quarters of Oranges prepared as above, filling up the interstices with liquid jelly until the whole space is filled up. Place the mould on ice; whip a pint of cream with half an ounce of isinglass dissolved in milk, and some sweetened Orange juice, which must be added a very little at a time, else the cream will not rise. When the cream is ready, and the jelly set, remove the smaller mould by pouring warm water into it: fill up the inner space with the cream, set the chartreuse on ice for an hour; turn out, and serve.

Those who have mastered the art of boiling sugar can make very pretty dishes with Oranges glazed with sugar boiled *au cassé*; but to enlarge upon this would, I fear, take up too much of your space.—*Queen.*

Fruiterers' Company.—The annual banquet of this company took place, as usual, on the 25th ult., at the London Tavern, Mr. R. Broadwater (master) presiding. The *City Press*, in its report of the proceedings, says:—This company, according to ancient custom, has the honour annually to present specimens of fruit to the Lord Mayor for the time being. The origin of this custom, it has been considered, is that the Lord Mayor's meter was formerly entitled to receive a portion or sample from every load of fruit coming into the City. The practice occasioned much controversy between the collector of such samples and the persons bringing in the fruit, until the company arranged that a present should be made to the Lord Mayor annually. In return, the Lord Mayor invites the court and officers of the company to a banquet at the Mansion House. In responding for the drinking of his health, the Lord Mayor said he could not forget that there was a peculiar custom connecting the Fruiterers' Company with the Lord Mayor for the time being. It originated in days when the Lord Mayor was supposed to measure the fruit, the corn, and the coal that came into the City. In these days, as they knew, oddments tumbled out of the baskets of fruit, and the Fruiterers thought it right that the chief measurer, or meter, should have some of them. The Fruiterers, he believed, had legally no control over the carrying, measuring, or clearing of the fruit, but their kindness of heart had continued nevertheless—their kind offerings were an evidence of their respect for the office of chief magistrate, and of their desire, he thought, to maintain that old connection, and thus to cultivate a social amenity which stimulated hospitality on both sides. He rejoiced to think that it was the privilege of the Lord Mayor to invite the Fruiterers' Company to dine with him, and he was sure that no banquet given during his mayoralty in the Egyptian Hall would have a greater interest for him than that of which the Company of Fruiterers would be his guests. He wished a similar custom pervaded the other companies.

Pine-Apples.—The island of St. Michael, so justly celebrated for its Oranges, is likely soon to be equally famous for its Pine-Apples. The production at present is not large, but is annually increasing. The "Ocean," steamer, brought 150 last week, which realised at public auction from 10s. to 30s. each.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—The replenishment of flower-beds from our reserve stock must now occupy attention; all spring flowering plants may be transplanted with impunity according to convenience. Several of the autumn-sown annuals too may be transplanted from their winter beds to where they are required for blooming, and to fill up vacancies between perennials. Hollyhocks and Foxgloves from last year's sowings should now be transplanted permanently in good rich soil; indeed, a spadeful or two of well-decayed manure mixed with the soil in each hole is an important addition. Ivy, Jasmines, Clematises, Honeysuckles, Roses, Cratæguses, Magnolias, and similar plants on walls should be thinned or pruned if necessary, and neatly trained. Roses on pillars should have the dead wood removed, the very long living shoots shortened, and the whole neatly retied to the stakes or pillars. A few Roses in beds and borders may be pruned to induce early blooming, but the general pruning had better be delayed for a short time yet. Suckers and very gross growths may, however, be removed from all, and stakes applied to such as require them. Form edgings of the variegated Queen of the Meadow, Arabis, Cress, Polemonium, Grasses, Daisies, Golden Feverfew, Euonymus radicans, Santolinas, &c. Some of these, such as the Golden Feverfew and Cress are only fit for spring gardening when saved from the previous year's sowings, and to be replaced again in April or May from spring-sown plants which do not so readily run to seed during the summer and autumn months. Various kinds of flower seeds should now be sown for early blooming, but the main crop of hardy annuals is best sown in the first week of April.

Greenhouse Plants.—A general potting of these should now take place. Some of the Fuchsias from under the stages should be turned out of their pots, have the old soil shaken from their roots, and then repotted in fresh soil in the same sized pots. Do not water them for a time, nor prune them closely until they begin to break. Cuttings of those struck in the autumn, and kept growing since that time, will now be good specimens, as will be also those that were propagated in winter. Of Lilium auratum a few of the most forward should be placed in the stove, and on a shelf near the glass, for flowering in May. Be careful in applying water at first; it is the safest to pour it gently round the inside of the pot—not over the whole surface of the soil. Some pots of L. roseum, punctatum, and album may also be treated in the same way. No water should be given to such as are still in the greenhouse until their shoots appear. Tritonia aurea is now beginning to grow; therefore, such as require shifting should be repotted in a compost of two parts good loam, one of leaf-mould or rotten manure, and some sand. Care must be taken in repotting not to injure the fleshy roots; the stock may, nevertheless, be readily increased by division. The coolest part of the greenhouse is sufficiently warm for them. Plants of Nerine should now be repotted and placed in rather a warm, moist temperature, to encourage growth. A compost like that for Tritonias suits them perfectly. Of Convolvolus mauritanicus the old plants may now be divided, potted in small pots, and kept in the warmest corner of the greenhouse; these plants are particularly suited for suspended baskets, but when grown in pots, and then transferred to the baskets, they form better flowering plants than such as are wholly kept in baskets. A few of the finest Cyclamen blooms should now be fertilised, and the plants should be placed on a side shelf; only a few, say half-a-dozen flowers, should be fertilised on one plant, from which all other flowers must be removed as they appear, otherwise the seed will not be so satisfactory. The last shift should be given to Cinerarias and Calceolarias, using this time a richer compost than that employed for the previous potting. Show and fancy Pelargoniums should now have a general shift, and be kept rather close for a few days afterwards; for the old plants shaking them out of their pots, and repotting them in the same sized ones is quite sufficient, provided manure-water be applied when their roots become matted. A too close temperature must be avoided, for the firmer and more stocky the growth is the more likelihood is there of a profusion of bloom. Some of the finest zonal Pelargoniums ought to be repotted and placed in gentle heat, to encourage them to form fine specimens for the conservatory.

Frames.—The stock of Pelargoniums to be used for bedding purposes may now be safely transferred from the various houses and pits to cold frames. Where several plants were put into one pot at lifting time for convenience in storage, they ought now to be separated and potted singly. Any required for yielding cuttings should be kept in some of the fruit-houses "at work" or in a gently heated frame. Autumn cuttings of bedding Calceolarias are now growing pretty strongly; their tops should, therefore, be pinched out and used as cuttings. The plants themselves should also be lifted and transplanted farther apart, in a good compost 8 inches deep, on a firmly-trodden subsoil. Ageratums, Verbenas, Salvias, and several other plants not required for stock, are best treated in a similar manner, because they grow freely, root well, and allow the sashes to be completely removed in the event of fine weather, thus causing a close, stubby growth by the middle of May. For propagating purposes a hotbed or two should be formed, either entirely of leaves or partly of leaves and partly of litter, in which to propagate plants by seeds, cuttings, leaves, roots, eyes, &c., and to start into growth dormant bulbs and plants that were rested during the winter. Seeds of most kinds of flower garden plants should be sown in them as soon as the heat subsides a little, and pricked off as soon as they have become sufficiently far advanced for that purpose. Caladiums, Achimenes, some species of Gesneras, Gloriosas, Curcumas, &c., may all be started now into growth, either in the pots they permanently occupy or in smaller ones, afterwards to be transferred to larger ones. Fern spores may also be sown in these hotbeds, but owing to the long time they generally take to vegetate, a heated pit is the most suitable place for them.

Hardy Fruit Garden.—All fruit trees should be pruned before this time, and their trunks and main branches cleared of Moss and Lichens. Young trees may yet be planted, and any old ones intended for transplanting next autumn should have their roots cut now, by which means they do not suffer nearly so much in removal as they otherwise would do. Prune back to fifteen inches above ground stocks on which grafts are to be put. Mulch the roots of lately planted trees, and affix strong stakes to all that require support; see also that espaliers are sufficiently staked and tied. Have all trees on walls properly pruned and nailed, as the flower buds are more than usually forward this spring. A good syringing with sulphur and water well mixed will be found very beneficial to wall trees. Make new Strawberry plantations and fill up empty species in old ones; remove all runners, dig between the rows, and apply a good mulching of litter between the rows on the surface of the soil. Collect all prunings and other rubbush and burn them, saving the ashes and likewise the charcoal resulting from the operation for manurial purposes. The prunings may be advantageously used in burning clay for applying to stiff soil, in order to lighten it and to render it porous.

Kitchen Garden.—Where advantage has been taken of the open weather which we have had for trenching and ridging every available piece of ground, satisfactory results may now be realised. Quarters not so treated are often so cold and damp that seeds sown in them perish, whereas well-trenched ground in almost all cases will be found in good condition. Draw earth to rows of Peas, and at the same time stake them. Sow a succession of marrow kinds, with one or two rows of Round Spinach between the rows. A plantation of early Potatoes should now be made in some warm quarter and in rather light soil; those in pits should be examined, rotten or diseased ones removed, and all sprouts rubbed off. Of Jerusalem Artichokes a plantation may be made in any odd corner, and all tubers of last year's crop yet in the ground should be lifted and housed. Any other roots of Parsnips, Beet, Carrots, and Potatoes left in the ground must now be lifted; for, although their flavour is maintained if kept in the ground during winter, unless they are lifted now they begin to grow, and their quality is consequently greatly reduced, for they become stringy. Some of the finest roots of Parsnips, Beet, and Carrots may be transplanted to a favourable position for seed. Sow some Early Turnips in a light warm soil. Of Cabbages sow some of the early sorts for summer produce, also some Red Cabbage, some Walcheren Broccoli, and Savoy seeds; Savoys sown early grow much larger than late sown ones. A sowing of Onions should be made as soon as the ground is ready. Onions are sometimes grown year after year on the same piece of ground, but that is a practice which cannot be recommended, better results being obtained from rotation with other crops on deeply trenched and well manured ground. Make a good sowing of Marshall's Dwarf Beans. Sow some Leeks, Chervil, Fennel, Dill, Parsley, &c. Increase pot herbs by division or by means of seeds. Make new plantations of Rhubarb, planting the crowns in lines 3 feet apart and 3 feet asunder in the row. Of Horseradish make fresh plantations in deeply trenched and well manured ground, the manure being kept in the bottom of the trenches, otherwise the roots fork. Crowns or pieces of the roots should be used for the purpose, and be dibbled in 18 inches deep.

MARKET GARDENS.

Where ground was trenched up into ridges before the late frost, it will now be in excellent condition for receiving plants or seeds, crumbling down freely upon the slightest touch and being moderately dry. The ridges of a part of the trenched ground ought to be levelled down with wooden-toothed rakes, and lines for Lettuces marked on the surface about 20 inches apart. This crop may be planted at once, choosing the most forward of the plants on those grown amongst Carrots for the purpose, and dibbling them in about 9 inches asunder in the row. Between these Lettuces lines may be drawn and Parsnips sown; the Lettuce crop will be removed before injury is done by it to the Parsnips. About the first of the month the main crop of Onions should be sown on ground that has been lying in trenched ridges for some time. Sow some beds of white Dutch Turnips and protect them, if practicable, with litter; they may, however, do quite well without it, although its assistance not only preserves them from birds but also from cold. Radishes that have not been covered are almost completely ruined; indeed, some that were sown at the base of a wall on a warm border six weeks ago have hardly vegetated, on account of the cold; what did come, except such as are quite close to the wall, are too stinted to be of any use — all through the effects of cold. By covering newly-sown Radish, Turnip, and Cabbage or Cauliflower seeds with litter until they germinate, and afterwards during cold weather and at night, not only is the security of the crop effected, but it is brought forward almost as rapidly as if covered with glass. Where a portion of the trenched ground can be spared, some of the best of the Cauliflower plants should be transplanted and protected with cloches or round vegetable baskets. For a few days after transplanting some earth should be drawn around the edges of the cloches or baskets until the plants begin to take root. As Cauliflower frames generally occupy a sheltered position, their site forms a good situation for Tomatoes, early French Beans. or for Cucumber frames. Some Cucumber seeds should be sown at once, if not previously done, in seed pans, and placed in a brisk hotbed. As soon as they vegetate, they should be pricked off two in a 6-inch pot, and replunged in the hotbed; after a time they may either be potted singly or transplanted permanently without being repotted. Frames for the reception of young plants must be got in readiness; last year's ones cleaned out will do, or new ones for the purpose may be made; 3 feet deep, 5 feet wide, and of any desired length are the common dimensions, consequently pits must be made accordingly, and filled with fermenting manure, which should be trodden quite firmly, so as to retain the heat longer than it otherwise would do. Over the manure some good soil should be placed, the frames set on and filled to within 10 inches or so of the glass with soil, and the plants planted. In private gardens the Cucumber and Melon frames are mostly on dung-beds above the surface of the earth, but those in market gardens are all on sunken beds, so that the frames are not much higher above-ground than an ordinary Cauliflower or Lettuce frame. This is found to be the most convenient arrangement.

NURSERIES.

Indoor Department.—The general repotting of all greenhouse and stove plants should now be pushed forward. Some plants are already in large enough pots for marketable purposes, therefore it is not advisable to repot them; merely clean the surface of the soil, removing with a wooden peg such of it as is free from roots, and surface dress with fresh soil. Small climbers, as well as many other plants, always sell best in 48 or 60-sized pots, and when they are reshifted or planted out permanently, the roots should be loosened and well spread out. Young Azaleas and Camellias not set with flowers should be repotted, placed in a close pit, the heat and moisture of which should be increased as the days advance. They should be syringed daily, shaded from strong sunshine, and have their growths pinched when they become 4 or 5 inches long. Cut back such plants of Burchellia capensis, Aloysia citriodora, Brugmansias, Plumbago capensis, Cassias, Lagerstrœmia indica, Fuchsias, Clematises, and other plants as are now beginning to grow. Roots of Begonias, Caladiums, Achimenes, Curcumas, Gloriosas, Alocasias, Aristolochias, Blandfordias, Erythrinas, and many other plants that have been at rest during the winter, should now be started into growth. Bulbs of all sorts, such as Lilies, Crinums, Nerines, Hippeastrums, Vallotas, &c., should now be in a growing condition, but it is sometimes desirable to retain a few without starting for some weeks yet for late bloom. Palm seeds of all sorts ought now to be sown in a warm moist pit or frame. Various methods of sowing these are practised; some sow them in pots or boxes, and pot off the seedlings singly some months after germination, or perhaps a year or more may elapse between sowing and potting; a good plan, however, is to take an ordinary flat Strawberry punnet or seed pan, and to half fill it with cocoa-nut fibre, then to lay the seeds in it thickly, and to cover them over with another thin coating of the same material, and then to plunge the baskets or punnets in a moderately brisk bottom heat. A number of small pots should then be got ready and filled with sandy peat, or with the admixture of a little loam; after the seeds have bursted and the plumules have emerged about an inch, prick off a seed into each little pot, so that the seed itself may lie on the surface of the soil. The pots should then be plunged in the hotbed and covered over with a frame or handlight.

NOTES OF THE WEEK.

—— We learn that General G. A. Von Jacobi is continuing his valuable work on the genus Agave. A second supplement to his monograph of these interesting plants, containing descriptions of many new species, has just appeared in the "Memoirs of the National Society of Silesia."

—— Mr. Charles S. Sargent, of Brookline, has been appointed Professor of Horticulture in the "Farm School" of Harvard University. An important feature of this department is a garden in which pupils can obtain not only practical instruction, but actual experience of the business of gardening.

—— A correspondent of the *Cologne Gazette* writes that having noticed the Phylloxera vastatrix on a Burgundy Vine which he had received and planted last year, he washed it with water in which anise seed had been boiled, the water being thoroughly impregnated with the smell and taste of anise, and the Vine has completely recovered.

—— Professor Bernardin, of Ghent, who has for some time devoted himself to investigations in economic botany, describes, in his last publication 100 plants which produce india-rubber and gutta-percha. He states that india-rubber is obtained chiefly from the Ficuses and plants of the Euphorbiaceous family, while gutta-percha is the product of plants which belong to the family Sapotaceæ.

—— In a letter from Professor Owen, who is now the guest of the Khedive in Egypt, we learn so much of the beauty of the gardens of that country in winter, that we almost wish we could exchange places with the swallows, who are enabled so easily to escape from disagreeable regions in winter to enjoy a better climate. The Professor describes the garden which surrounds his residence as being full of Mignonette, Zinnias, Marigolds, Beans, Roses, bedding plants, and many other of our summer favourites, all in full sweet bloom.

—— A prize of ten guineas is to be awarded triennially to any student who has attended the botanical class at the Royal Botanic Garden, Edinburgh, during at least one of the three years preceding the award, and has gained honours in the class examinations. The prize is to be awarded for practical research. The subject for competition is to be intimated by the council at the commencement of each triennial period, along with a notice of the manner in which the prize is to be awarded.

—— It is not generally known that the Orange has been for a long time extensively cultivated in Japan. Such, however, is the fact, which, strange to say, has never been mentioned by writers who have described that country—not even by Siébold. This ignorance, no doubt, was due to the restrictions which the Japanese formerly placed upon foreign visitors, and which prevented them from obtaining that accurate knowledge of the country with which (thanks to the more sensible and liberal policy recently adopted by the Japanese Government) the rest of the world is likely soon to become familiar.

—— The bright sky-blue Anemone apennina has been in fine flower in the open grounds at the Hale Farm Nursery, Tottenham, for these last ten days, also the spring Snowflake, the little early Squill (Scilla bifolia), Scopolia orientalis, and the charming little Rhododendron præcox. In frames at the same establishment Primula verticillata and erosa, Saxifraga ciliata, Iberis sempervirens, Schizostylis coccinea, various Cyclamens, American Cowslips, Iris reticulata, tuberosa, pumila, persica, four varieties of Narcissus, and Primula cortusoides amœna are all in full flower.

—— During the violent storm which occurred on the 12th of last December, a remarkable tree was blown down and destroyed. This was a common Horse Chestnut, forming one of a plantation of these trees which was made in the park of the Château de Bercy in the year 1600. It was, consequently, 272 years old, at the least, when it perished, yet, during the previous summer, it had exhibited a vigorous growth, and would probably have lived many years longer, had its roots possessed a more tenacious hold of the soil, the trunk (which was nearly 6 feet in diameter) being comparatively sound. Most of the ground which formed this ancient park is now built over, and the old tree, in its fall, crushed the storehouse of a wine merchant, causing him a loss of more than thirty hogsheads of wine.

—— The Horticultural Society of Seine-et-Oise will hold an exhibition at Versailles during the last two days of next May and the 1st of June, open to all gardeners, amateur and professional. No manufactures will be exhibited except such as have a direct relation to horticulture. Exhibitors may compete in any of the 109 classes which are comprised under the following general heads:—New plants introduced, plants raised from seed, good culture, hot-house, temperate house, open-air, plants in peat soil, fruit trees, vegetables, fruit, objects of art and manufactures relating to horticulture. All matters to be exhibited must be located in their proper places in the pavilion of the exhibition, at the exhibitors' expense, not later than six o'clock p.m. on Wednesday, May 28. The jury will assemble on the 29th of May, at ten p.m., in the grounds of the exhibition.

—— The Castor-oil Plant is now cultivated in California, and an average crop of 400 lbs. of oil to the acre is obtained.

—— We have just received the fifteenth edition of Mr. Rivers's "Orchard House."

—— We learn that a weeping form of that fine American tree, the Hemlock Spruce, has recently originated in New York. It droops, it is said, nearly as much as the Kilmarnock Weeping Willow.

—— We understand that the business of hot-water engineer hitherto carried on by Mr. T. S. Truss, Friar Street, S.E., has been converted into a company, called "The Patent Pipe and Boiler Foundry Company (Limited)."

—— It has been ascertained that the acreage under Flax in Ireland last year was 20 per cent. less than in 1872; but there was an increased yield of 38 per cent., and, with moderately good weather, the crop would have compared favourably with the highest ever obtained in that country.

—— M. Leon Sisley, writing from Japan on the 17th of last November, states that the fruit crop of the Diospyros Kaki or Date Plum was at that date nearly all gathered in. This intelligence is not a little surprising, as, even in the warm parts of France, the Diospyros does not mature its fruit before the end of December.

—— An American has made an experiment with the view of ascertaining how far soil is protected from cold by snow. For four successive winter days, there being 4 inches of snow on a level, he found the average temperature immediately above the snow 14° below zero; immediately beneath, 10° above zero; and under a drift 2 feet deep, 27° above zero.

—— M. B. Verlot, the distinguished director of the herbaceous department in the *Jardin des Plantes* at Paris, has just published an interesting and instructive book on Alpine plants, a work for which his long experience as a collector of these plants has specially qualified him. It forms a handsome octavo volume of 320 pages, illustrated with 150 coloured plates, and 78 wood-cuts. We shall give a more detailed account of it in a future number.

—— We learn that a series of grand national Flower and Fruit Shows are to be held in the grounds connected with the Dublin Industrial Exhibition Palace, during the months of June, July, September, and November next. Schedules of prizes have been issued, and the dates fixed for holding the shows are June 11th and 12th; July 2nd and 3rd (the Grand National Rose Show); September 10th, 11th, and 12th; and November 19th, 20th, and 21st.

—— It is deplorable to see (says a correspondent of the *Daily News*) into what a state the Vatican Gardens have fallen. One might almost imagine oneself in a forest. Even those parts which are mostly frequented by the Pope are completely neglected. There may, however, be a little artifice in all this. The staff of gardeners was very large previous to the 20th of September, 1870; but since that date many have been dismissed, on the ground that his Holiness could not afford to retain their services. The same thing was done by the churches and all the other dependencies of the Vatican.

—— M. J. B. Weber, the Director of the Botanic Garden at Dijon, considers the Potato-disease to be quite analogous to the Oïdium of the Vine, and believes that it may be successfully combated in the same manner, *i. e.*, by sulphur dusting. He has arrived at this conclusion from the fact that some rows of Potatoes which were planted close to a Vine trellis, and had received a portion of the sulphur with which the Vines were dusted, exhibited no signs of the disease, while the remainder of the crop, which was out of range of the sulphur, suffered severely from it, nearly one-fourth being rotten in a month after they were gathered. The leaves on the plants on which the sulphur had fallen continued green and unspotted up to the time when the crop was taken up, and in three rows M. Weber did not discover a single diseased tuber.

The "Kibble" Conservatory.—The erection of this structure in the grounds of the Botanic Gardens, Glasgow, is progressing apace, and the present idea is that it will be opened to the public about the middle of the month of May next. That it will form an addition of mark to the public exhibitions of Glasgow is an indisputable fact. Opportunity has been taken to enlarge it in several important directions, and generally to adapt it to its new situation and new uses. From the front door, which faces the west, to the extreme end of the structure is a distance of full 240 feet. The first door on the right, after entering by the front, leads into a room to be devoted to the display of interesting models and relics; a corresponding room on the left, of the same dimensions—50 by 25 feet—being used as the "Moss house," where, when completed, the visitor will be able to realise, so far, the poet's idea of "cool grot and mossy cell," with all the advantages that art can add to nature. Passing onwards, and flanking a basin of water 24 feet in diameter, are, to right and left, two spacious refreshment rooms, leaving which we enter under the great glass dome, 150 feet in diameter and 50 feet in height. This may be called the grand reception saloon of the place, and will form a most eligible arena for promenade concerts. Already it is surrounded by casts of some of the most admirable works of sculpture that ancient and modern art, the former especially, has produced; and many valuable plants also, tree Ferns in particular, transported from Coulport, are now disposed around the circle.

LAW NOTES.

THE QUEEN v. COWLEY AND HUMPHREY.

This case raised another of those subtle questions which are constantly being raised on the law of stealing or larceny. The prisoners at the last winter assizes for the county of Sussex were indicted for stealing Onions. The prosecutor, having a cart loaded with Onions, met the prisoners, who agreed to buy all the Onions at a certain price, £3 16s., ready money, the prisoners saying "You shall have your money directly the Onions are unloaded." The Onions were accordingly unloaded by the prosecutor and the prisoners together at a place indicated by the prisoners. The prosecutor then asked for his money. The prisoners thereupon asked for a bill, and the prosecutor made out a bill accordingly. One of the prisoners said they must have a receipt from the prosecutor, and in the presence of the other made a cross upon the bill, put a penny postage stamp upon it, and then said they had a receipt and refused to restore the Onions or pay the price. The next morning the prisoners offered the Onions for sale. The jury convicted both prisoners and said they found that they never intended to pay for the Onions, and that the fraud was meditated by both the prisoners from the beginning. The prisoners' counsel insisting that under the circumstances there was no larceny, the learned Judge (Mr. Justice Byles) reserved the point. On the case being again stated the prisoners' counsel urged that it was a case of credit, on which

The Lord Chief Baron said no doubt if credit was given it could be no stealing; but the question was whether credit was given. There was no agreement for credit, and, on the contrary, there was an express agreement for ready money. In every cash sale one act must be done first—the laying down of the price, or the laying down of the article; but there is no real sale and delivery until the money is paid. The felony was completed when the prisoners got the Onions, for they got them by a trick, and meant to steal them. The court therefore unanimously affirmed the conviction.

BROAD v. HUXLEY.

Vice-Chancellor Malins has delivered judgment in this case. The plaintiff, Mr. Broad, a retired tradesman, occupies a small leasehold house in St. John's Wood. The defendant, Professor Huxley, some time since, bought a house in Willow-gardens, from which there was a slight inclination towards the plaintiff's house. Last autumn Professor Huxley, desiring to make a lawn in front of his garden, proposed to raise the ground a little and drain it towards the plaintiff's house. The plaintiff complained that the raising of the ground caused his garden wall to bulge, that the trees which Professor Huxley had planted darkened the plaintiff's house, and principally that, by the system of drainage adopted by Professor Huxley, the basement of plaintiff's house had become uninhabitable. The Vice-Chancellor said he was satisfied by the evidence that the plaintiff had not made out a case for the interference of the court, and his bill must be dismissed with costs. It was a great pity that he had rushed into litigation. The value of the plaintiff's house was £700, and this litigation would cost him probably £500.

COVENT GARDEN MARKET.

February 21st.

Flowers, which are well supplied considering the season, have not altered in kind since our last report. Hothouse produce is confined to Grapes, Pines, and a few Strawberries, the prices of which are nominal. Some capital St. Michael's Pines are again offered, and realise rather higher prices than those quoted by us last week.

PRICES OF FRUIT.

		s.	d.		s.	d.
Apples ...	half sieve	3	0	to	5	6
Cobs	lb.	2	0		2	6
Grapes hothouse	...lb.	6	0		12	0
Lemons	100	4	0		8	0
Melons, Spanish	each	2	0		0	3
Oranges	100	4	0		8	0
Pears ...	per doz.	8	0		12	0
Pine apples ...	lb.	6	0		10	0
Walnuts ...	per 100	2	0		3	0

PRICES OF VEGETABLES.

		s.	d.	s.	d.
Asparagus	per bundle	10	0	30	0
Beans, French	per 100	1	6	3	0
Beet, Red ...	... doz.	1	0	3	0
Broccoli ...	bundle	0	9	1	6
Cabbage ...	... doz.	1	0	2	6
Carrots ...	bunch	0	4	0	6
Cauliflower	... doz.	2	0	6	0
Celery ...	bundle	1	6	2	0
Coleworts	doz. bunches	3	0	4	0
Cucumbers	... each	2	0	3	0
Endive ...	... doz.	1	0	2	0
Fennel ...	bunch	0	3	0	6
Garlic ...	... lb.	0	6	0	4
Herbs ...	bunch	0	3	0	0
Horseradish	bundle	3	0	5	0
Leeks ...	bunch	0	2	0	0
Lettuces ...	score	1	0	2	0
Mushrooms	pottle	1	0	2	0
Mustard & Cress	punnet	0	2	0	0
Onions ...	bushel	2	0	5	0
pickling	quart	0	6	0	6
Parsley	doz. bunches	3	0	4	0
Parsnips ...	... doz.	0	9	1	9
Potatoes, Kidney	... cwt.	10	0	14	0
Potatoes, Round	... do.	10	0	14	0
Radishes	doz. bunches	0	6	1	0
Salsafy ...	do.	1	0	1	0
Scorzonera	...per bundle	0	9	1	0
Spinach	... per bushel	3	0	4	0
Tomatoes ...	per doz.	1	0	3	0
Turnips	... per bunch	0	3	0	0
Seakale	...per punnet	1	6	2	6

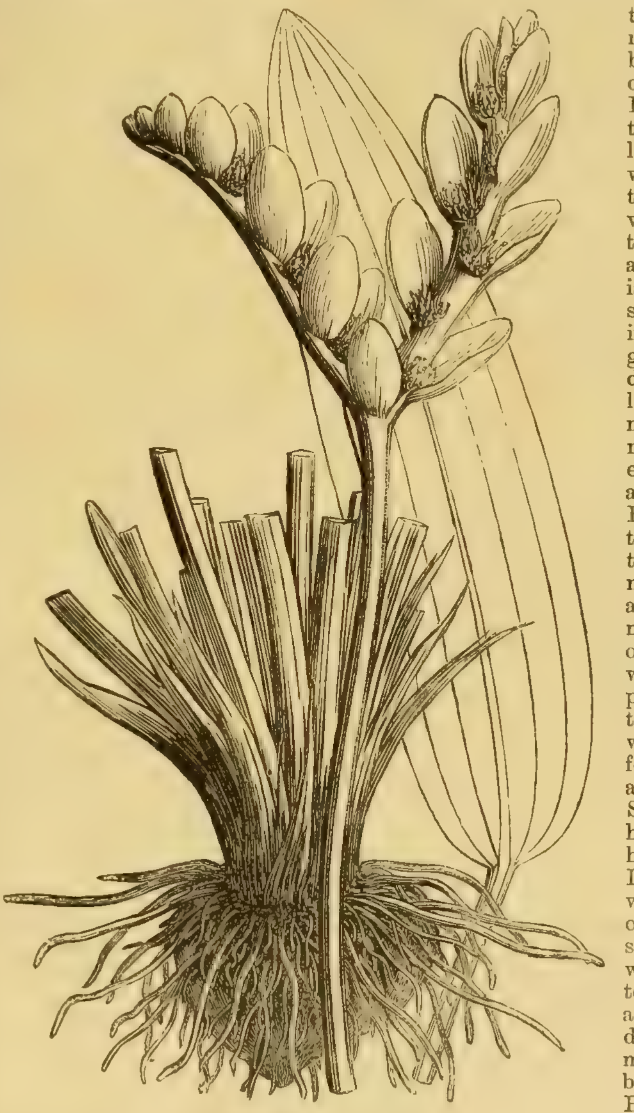
THE GARDEN.

> "This is an art
> Which does mend nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

THE SWEET-SCENTED POND WEED.

(APONOGETON DISTACHYON.)

THIS plant has been growing in the pond of the Royal Botanic Garden, at Edinburgh, for the last 40 years, and now forms many large patches in various parts of it, the largest being 48 feet in circumference. The situation where the pond stands, was originally a marsh; when it was made, the bottom was causewayed with stones, placed half an inch apart, in order to allow the numerous springs, peculiar to that portion of land, freedom to rise between them. The pond varies from 2 to 5 feet in depth, and the bottom is thickly coated with mud, arising from the tree leaves which are annually blown into it. In this decomposed vegetable matter the Aponogeton thrives well, and seeds, which are abundantly produced during the autumn months, germinate freely in the muddy bottom. In consequence of the number of springs which exist, many portions of the pond are never coated with ice, even during the most severe winters. The overflow is very large, and is never found to vary at any time throughout the year, not even during very dry summers. To these circumstances I attribute the healthy condition of this beautiful pond weed, which is indigenous to the Cape of Good Hope. The Aponogeton flowers abundantly every year, not only during the spring, summer, and autumn, but often during the winter, particularly if the weather is at all mild. Plants of it have been sent from this establishment to many ponds throughout Great Britain, but in few has it been successful, evidently owing to the want of constant springs bubbling up amongst their roots, which causes a continual change of water. Plants of it have, however, succeeded in several mill ponds where the water is kept warm by the condensed steam constantly thrown into them.



The Sweet-scented Pond Weed.

JAMES M'NAB, *Royal Botanic Gardens, Edinburgh.*

BRITISH PLANTS FOR THE GARDEN.

SUGGESTING, the other day, to a friend who is laying out and planting a sort of semi-wilderness appendix to his garden and pleasure-ground, that he should introduce various plants from the woods in his neighbourhood, as well as aquatics and hedgerow-flowers, a bystander remarked that in England there grew wild "nothing but weeds," intending to imply thereby that nothing could be found suitable in our indigenous Flora for the ornamentation of ground intended for enjoyment. A moment's reflection showed plainly that not only are there plenty of beautiful and appropriate plants only waiting the transfer, but that a very considerable number of our existing garden favourites are genuine ancient Britons. Everyone has heard of the famous scene in Molière's comedy of "Le Bourgeois Gentilhomme," where M. Jourdain is quite startled to find that he has been talking prose all his life without knowing it. Many a gardener who looks complacently on his flower-borders as constituted, he fancies, of the "rich and rare" from foreign countries, would be as much astonished, perhaps, were he to enquire carefully as to the original birth-place of the particular species, for it would turn out that many a score of the sweetest and prettiest things that are cherished and tended so carefully, and that never go out of fashion, were brought, in the first instance, out of the fields and groves of Old England itself. That many of these garden inmates are no longer to be met with during our walks in the country is quite true; that others were always very local and scarce is probably true likewise. Their disappearance from the primitive spots is a result, in no slight measure, of the very fact of the institution and establishment of gardens; since, in the early days of horticulture, when the lovers of flowers and gardens had nothing at command except the native produce of the soil; when exotics were nearly unknown, and such common things as the Fuchsia and Dahlia had two or three centuries yet before them to "blush unseen" in their remote abodes;—there was no alternative but to select the most enjoyable things that offered, and the roots of these would of course be conveyed promptly from the wild habitat to the consecrated little spots which were the gardens of our forefathers, at last almost to the abolition of the original home. See, even at the present day, how hard it is for many a Fern to hold its own in the wilderness! If suitable for a rockery, or wanted to complete a collection, or, hard and sorry fate, thought saleable in the market-place—which often means condemned to be dried to death in the sun, and then be thrown into the dust-heap—not a frond is let remain, and the locality becomes to botanists a thing of the past. How many of the most curious and alluring of British plants have in this way (aided by the obliterating results of drainage, &c.) now become extinct, or nearly so, in places where once abundant! Witness the wild English Lady's Slipper, Cypripedium Calceolus, and the yellow Saxifrage, Saxifraga Hirculus. Had the Primrose, the Cowslip, the Lily of the Valley, the Sweet Violet, the Wallflower, been less profuse, and less gifted with that spirited tenacity of their ancestral homes which forbids effacement, how certainly would these too have become botanical rarities, and a display of their blossoms be a spectacle only in the garden. Happily, the great majority of our wild-flowers, like the wild-flowers of all other countries, have got so good a grip of the paternal estate, that it is not likely they will ever become dispossessed wholly and absolutely. There is always a probability, to say the least, of seeds lingering in the ground, or fragments of rootstocks biding their time, and which, except where the surface has been rendered wholly unfit for the maintenance of plant-life, will keep the old tradition going, and float everything forwards and onwards.

With these names just cited, before us, Lady's-Slipper, Cowslip, Primrose, &c., it behoves us to be cautious, accordingly, in the use even of the term "weeds." Every plant is a weed somewhere, if being a weed means growing wild; and the botanist will insist, perhaps, that intrinsically there is no such thing as a weed. He will, at all events, demand the recognition of the right of every plant to exist in the place for which nature designed it, and for which its peculiarities and physiognomy well adapt it. May not the crimson Musk Thistle upon the hillside hang out those glorious heads of honied filagree which the bees quit so reluctantly? And may not the Ajuga lift up its lovely pagodas of freckled blue among the young grass? No one will say nay; and yet these are only "weeds." It comes then to this, that no plant is a "weed" naturally, and inevitably, and universally. Through excessive multiplication, in localities where not wanted, a plant converts itself into a weed, technically so-called, and then must be exterminated or subjugated by force; but as long as it abides in its own proper sphere, it is no more a weed than song-birds are vermin, though did they multiply after the fashion of flies, or conduct themselves after the manner of rats, the sweetest choristers that may be would fall under the same law, and have to submit to be treated like criminals. A "weed," to put it briefly, is a flower growing where not wanted, or where it hinders the profitable use of the spot it occupies. Hence, in the Orchid house, that exquisite little Wood-sorrel from the Mauritius, with triple leaf and golden corolla, becomes a weed, as does likewise its frequent companion, that elegant Acanthaceous plant the Gymnostachyum Cumingianum; the spikes of lilac flowers which this latter produces asking for it, in truth, a better fate than that of Groundsel. Lilies of the Valley would become "weeds" if they interfered with the Mint bed after notice to quit.

Tried accordingly by this rule, the true and just one, England possesses no larger proportion of weeds than do other countries, and even in the arbitrary and conventional sense of the word, no small proportion of the exotics imported as flowering plants are every bit as "weedy" as the worst that, upon that rather vague charge, might be pointed out among our indigenous plants. The pleasant fact, however, and that which we set out to illustrate, is that our gardens owe much of their finest and most perennially delightful interest to the presence of British plants—plants selected in bygone days from amid the miscellaneous fantasy of the meadows and woodlands, the cliff, the mountain slope, and the seashore, and this because of their excellent qualities. Shameful would it be were they ever to be dismissed from their places, but happily there is little danger, for no one who really loves flowers could ever find it in his heart to refuse them at least a corner, while many have become so thoroughly established that they would now be missed almost as much as were they Geraniums. Such, for example, are the Pansy, the Forget-me-not, and the white Water Lily in the lake, Think too what a glorious phalanx of shrubs and trees hold their place in the list of natives! The Oak, the Beech, the Birch, the Holly, the Fir, the Yew, the Mountain Ash, the Gueldres Rose; the Hawthorn again, the Tamarisk, Ivy, and Arbutus. Are these to count as nothing? So far from it, let the garden, the park, and pleasure-ground be carefully and thoroughly stripped of their country cousins, and though there would be plenty left to wonder at and admire, it would be much the same as if Shakespere were expelled our libraries and the language of cultivated lips, or as if the Plantagenet Cathedrals were pulled down to make room for Goods Stations.

PYRAMIDAL FLOWER BEDS.

One or two beds of this kind are telling objects in any garden, however small—not only in those of the severely formal style, but also in places where nature has been more allowed to take part in the arrangement. When well done they have the appearance of large cone-shaped plants, some 6 feet in diameter and as much in height. Both leaves and flowers are presented to the line of sight; there is consequently not so much glare to dazzle one's eyes as when the beds are all trained to a flat surface. Such beds associate well with masses of shrubs on grass wherever it is desirable to introduce colour to brighten up sombre foliage; and this, perhaps, is the most legitimate way of using them, although I employ them with good effect to break the formality and sameness produced by beds of low-growing plants. Nearly all kinds of plants do well under this kind of treatment; Coleus Verschaffeltii especially comes out with that peculiarly rich metallic lustre that this plant assumes under favourable conditions. I have often heard it remarked by visitors that they must take a great deal of water, but they really do not; for when the beds are built up all the interstices are filled in with moss, and this keeps the soil moist and cool. They are easily made, and, as they are altogether above the surface, there is no preparation of site required. Beds of this kind can be made of any size, but the most suitable is about 6 feet in diameter, and about the same in height. Strike a circle of the desired size on the grass; the turf may be taken up and used elsewhere. With a crowbar make holes round the circumference of the circle 1 foot apart. and about 8 inches deep. This will give eighteen spaces, and will consequently require eighteen stakes about 1½ inch in diameter—nine of these to be 7 feet long, and the remainder 4 feet 6 inches long. Insert the thick ends of the stakes in the holes previously made round the circle, taking a long one and a short one alternately. Build up a cone-shaped mass of clay or strong adhesive loam in the centre of the circle, about 4 feet in diameter and 4 feet 6 inches in height, and ram it together firmly to prevent settling; then draw the stakes in at the top, and secure them with thin wire to a strong wire ring 6 inches in diameter, sawing off afterwards the projecting ends of the stakes. Run a wire also round the tops of the short stakes, so as to brace all together, and the framework is then completed. Having secured a bundle or two of straw, damped it, and drawn it out straight, commence planting the bed by laying small handfuls of straw just inside the stakes, and then a layer of soil in the bottom; and the first row of plants may be placed about 3 or 4 inches from the bottom, and so on till the top is reached; a layer of soil, and then a row of plants placed horizontally, finishing off with one strong plant in the centre at the top. The thin seam of straw keeps the soil from running out, and when all is finished cut off with the shears the few loose straws that stick out, and fill in all the little cracks with moss. As the work proceeds, make all firm, to prevent settling. Good soil should be used for this purpose; we generally use the soil that has done duty for Cucumbers and Melons the previous year. The erection of these beds is not the formidable job the uninitiated might imagine from reading my somewhat prolix statement. No. 1 pots, filled in this way with the surplus bedding plants, are very effective for standing about terraces where there are large breadths of bare gravel. I don't attempt to disguise the fact that it takes a considerable number of plants to plant one of these beds effectively; but they are generally much admired, even by those who lose no opportunity of railing against the prevailing fashion of grouping together masses of bright colours unrelieved by foliage. E. Hobday.

WINTER ASPECTS OF VEGETATION IN MADEIRA.

The spring flowers of Madeira are succeeded by those of summer, those of autumn, and those of winter without interruption; and among the latter the Rose reigns still supreme. The Queen of scented flowers is there what our florists technically term in regard to a special division of the varieties, a perpetual—a true perpetual—for it not only flowers late into the autumn, like the "Perpetuals" of our English gardens, but all through the winter division of the year. A writer on board Her Majesty's Ship Challenger, now on an interesting voyage of scientific discovery, sends home a glowing account of the gardens, and of the general aspect of the vegetation of the island of Madeira during the present month of February; and though filled, as he must have been, with thoughts relating to scientific matters, he could not resist—when the vessel anchored off Funchal, the attractions of the verdure and flowers of Madeira, as they revealed themselves to him—filling his journal of that day's impressions with vivid descriptions of the beauties of terrestrial vegetation that suddenly burst upon his sight in that lovely island, as he saw them on the 3rd of February last. Delightful and striking, says the writer, were those first impressions after coming from the monotonous sea, of the luxuriant gardens of Madeira, gay with flowering plants and high cultivation as far as the eye could reach up the mountain sides, almost to their very summits. "Nature here exhibits herself," we are told, with such varied charms that imagination can scarcely conceive a lovelier scene. A ramble on shore through some of the gardens in which the plants, though not exactly in midsummer, were in a high state of luxuriant development, proved that it was not the haze of distance that "lent enchantment to the view," but that a closer acquaintance developed new beauties, which, to be fully appreciated, required a nearer inspection. There were abundance of sweet-smelling Roses, blooming Oleanders, and Agaves more than 40 feet high; and a vast profusion of the shining green foliage of Camellias; with Cypresses, Laurels, Myrtles, sweet Magnolias, and Fuchsias; together with Banana, Sugar Cane, Coffee shrubs, Mangroves, and Pomegranates; and also the fine masses of foliage of grand Chestnut trees and Planes, which appear to be evergreen in that soft climate.

But, notwithstanding all the advantages of delicious temperature, the vegetation of Madeira is subject to occasional drawbacks, in the shape of incidental plant diseases, such as that with which the Vine has been recently visited in many parts of Europe. In Madeira, indeed, that scourge of vineyards seems to have been far more severe than in less favoured climates, insomuch that after its first appearance, in 1852, its progress was so rapid and fatal that many of the most celebrated vineyards, from which the celebrated wine was obtained of the highest qualities and in the largest quantities, have been either entirely destroyed or rendered utterly valueless. The destruction has, in fact, been so complete that the Sugar Cane has been tried with considerable success as a commercial substitute for the Vine; and two large factories have been established in the outskirts of the town, in which a large number of workmen are employed in sugar making. The February weather of the present year is described as lovely: the wild flowers as well as garden flowers being everywhere in bloom. When one thinks of these attractions within a pleasant yacht-sail of English ports, how is it that we take no advantage of the near proximity of an available summer so close at hand during the depths of our frigid winter? How is it that those who are devoted to gardens, and who, when the frosty seal of cold has been set upon them, and nipping winds have rendered their charms all but inaccessible to any but very robust lovers, blindly hasten to London to seek forgetfulness, in a round of uncongenial society, of the pleasures of which they are deprived? How strange it is that, instead of seeking the sooty retreat of a stuffy house in May Fair, they do not purchase a bright sunny villa in Madeira, and there pass the months of the year that are so dreary in England! By this temporary change of residence garden lovers would secure a continuous interest in their horticultural pursuits without the monotony of a perennial summer in England, if such a thing were possible. The vegetation of Madeira would contrast pleasantly with that of Great Britain by means of the semi-tropical character of many plants and trees which grow robustly there, while they can only be cultivated under glass with us. With the advantage of the great advances recently made in English horticulture, a much greater variety of plants might be established in Madeira than are at present in cultivation there. Indeed, it is probable that all the noble plants so exquisitely figured in the "Flora Græca" would thrive luxuriantly in that climate—and what glorious gardens they would make!—while many others, also requiring a somewhat higher temperature than that of Greece, would superadd the charm of a semi-tropical vegetation without the cultivator having to endure the serious drawback of the oppressive heat of their native climate. Madeira possesses, in fact, one of those happy temperatures in which the plants of both hot and cold climates thrive almost equally well.

Still a little nearer home are the Azores—an island group nearly as attractive in climate and aspect as Madeira, the island of St. Michael presenting landscapes of exquisite beauty, though its winters can scarcely be said to be as equable as those of Madeira. Farther south, but still within a few days' steam or sail of England, lie the Canary Islands, on the gentle slopes of which most charming retreats might be built, and surrounded by luxuriant plantations, beautiful throughout the winter, to which we might retire in the season of our British snows and frosts, and, leaving the robin and the thrush, our only feathered songsters in winter, enjoy the cheerful sight of those pretty yellow finches which have taken the name of their island homes by which they are so well known in England, but only as cage-birds, on account of the severity of our winters. We can never, in our climate, see them flitting like flashes of yellow light among the trees and bushes of our English gardens as we might in shrubberies established round English homes in the Canaries. This change of residence for the winter months might, judging of it in the presence of a coal famine which may be of long continuance, prove a vast economy to certain classes dependent upon a fixed income, and so tend to a great increase of comfort combined with a decreased expenditure. H.

Climbing Tropæolums.—Cold, bare, and formal masses of shrubs look none the worse for a little lighting-up during the summer months by means of flowers of various kinds. Few things are so acceptable for this purpose as the climbing forms of the Tropæolum, such as Lobbianum and Canariense; and if a few seeds of these be dropped into the ground just behind any dense, stiff-growing shrubs, they will soon grow and attach their young shoots to them, and then run about and flower with great freedom. Especially are the small-flowered and more refined forms of the Lobbianum section suitable for this purpose, as they are nothing without support, and yet do not grow with that degree of coarseness that characterises the commoner kinds. If the seeds are sown behind the shrubs, and as the plants grow the shoots are somewhat informally brought over towards the spectator, the effect is greatly enhanced, as the flowers are better drawn up to meet the eye. The more varied the colours used, the better. At no time need these creepers look unsightly, as at the only possible period of destruction—that is, with the early autumn frosts—they can soon be pulled off the shrubs and transferred to the rubbish heap; and if the amount of growth has not been too abundant, the shrubs will be but little the worse for their summer dressing. Once get a good plant, and it can be easily maintained from year to year by self-sown seed. Deep digging amongst shrubs should be emphatically eschewed; the surface should only be slightly pointed with a fork, or kept free from weeds with the hoe.—A. D.

Herbaceous Plants for Smoky Districts.—Will you kindly give me a list of herbaceous plants that will thrive in a smoky district?—An Original Subscriber, *Leeds.* [The following will answer your purpose, viz.:—

- Acanthus
  - latifolius
  - longifolius
  - spinosissimus
- Achillea
  - Eupatorium
  - Ptarmica, fl, pl.
- Anemone
  - angulosa
  - apennina
  - coronaria
  - fulgens
  - japonica
  - sylvestris
- Asclepias
- Aster
  - Amellus
  - lævis
  - Novæ Angliæ
  - Novi Belgii
  - pyrenæus
  - Reevesi
  - turbinellus
  - versicolor
- Baptisia
- Callirhoe
- Calystegia
  - dahurica
- Campanula in vars
- Centranthus
- Coreopis
  - lanceolata
- Coronilla
  - montana
- Corydalis
  - nobilis
- Delphinium in fine variety
- Dicentra
  - eximia
  - spectabilis
- Dictamnus
  - Fraxinella
- Dodecatheon
  - Meadia
- Echinops
  - ruthenicus
- Epilobium
  - angustifolium
- Erigeron
  - speciosum
- Erodium
  - Manescavi
- Eryngium
  - alpinum
  - amethystinum
- Funkia
  - grandiflora
  - Sieboldi
- Galega
- Gentiana
  - Andrewsii
- Geranium
  - Lambertianum
  - sanguineum
  - striatum
- Gypsophila
  - paniculata
- Hedysarum
- Helleborus
  - niger and its vars.
- Hemerocallis
  - flava
  - graminea
- Iris in vars.
- Lathyrus
  - grandiflorus
  - latifolius
  - rotundifolius
- Linum
  - flavum
  - narbonnense
  - perenne
- Lupinus
  - polyphyllus
- Lychnis
  - Viscaria
- Lythrum
  - Salicaria roseum
- Monarda
  - didyma
- Œnothera
  - macrocarpa
  - marginata
  - speciosa
- Orobus
  - vernus
- Pæonia in great variety
- Papaver
  - bracteatum
  - lateritium
  - orientale
- Phlomis
  - herba-venti
- Phlox in vars.
- Physostegia
  - imbricata
  - virginiana
- Plumbago
  - Larpentæ
- Polygonum
  - cuspidatum
- Pyrethrum
  - carneum
- Ranunculus
  - amplexicaulis
  - spicatus
- Rudbeckia
  - hirta
  - speciosa
- Saponaria
  - ocymoides
- Saxifraga
  - cordifolia
  - crassifolia
- Scutellaria
  - alpina
- Sedum
  - kamtschaticum
  - spectabile
- Silene
  - alpestris
  - Schafta
- Spiræa
  - palmata
  - venusta
- Statice
  - latifolia
- Sympyandra
  - pendula
- Symphytum
  - bohemicum
  - caucasicum
- Tradescantia
- Tritoma
- Trollius
  - napellifolius
- Veronica in var.]

THE ARBORETUM.

MOVEMENT OF THE SAP.

Mr. Chamney's suggestion as to the cause of the ascent of the sap in plants (see p. 142) is exceedingly well put, and I am inclined to agree with him that the mechanical filling up of the empty vessels in the plant with sap, by the action of the root, must gradually cause it to ascend; the point, too, where his theory seems of value is the explanation it supplies of the ascent of the sap previous to the unfolding of the leaves; for that it must have ascended to supply the bursting buds with nourishment is plain, and the sucking or evaporating power of the leaves was not there to draw it up. I welcome his suggestion as a valuable contribution to the elucidation of the whole process, but that his mechanical power does not do it all or even the main part is plain from the experiments tried by Mr. Spencer Herbert and Prof. M'Nab, and which can easily be repeated by any one. Their experiments were conducted in this way:—A twig bearing a number of leaves was cut, and its stem plunged in a glass jar containing water coloured by magenta, and the leaves were then exposed to the action of the sun. Now it is clear that if Mr. Chamney's mechanical explanation was the sole one of the ascent of the sap, and the leaves had nothing to do with it, whether by evaporation, or, more figuratively, by pumping it up, then, under such circumstances, the sap must have stood still, for the bottom of his closed vessel was out, the roots were gone—no more sap could be poured in to keep the ascent going. Indeed, on the same mechanical principles on which he rests, the sap in the twig ought to have run out by force of gravity, but we know that it never does in such a case. It is never the twig cut off that bleeds; it is the branch from which it is taken. But more than that, in the experiments in question the sap must have continued to rise in the twig, for presently the magenta-coloured liquid began to rise in it, and the longer the twig remained in it the higher it rose. As I say, it was sucked up by the leaves, and a considerable portion of the most interesting observations during the experiments were how far it ascended, by what vessels it ascended, and more particularly in relation to this point, how the ascent was observed to be feebler and feebler as each twig was furnished with fewer leaves, until in those twigs which were deprived of leaves altogether it was found to have almost entirely ceased; and I believe if the experiment had been carried a step further, and the twig deprived also of its bark, the ascent would have ceased absolutely and entirely.

Mr. Chamney will see, too, that without this machinery of the leaves he could not get quit of the large quantity of water constantly drawn in by the roots and contained in the sap—that water is not needed for the solid constituents of the plant. It has to be got rid of, and is, in truth, got rid of by evaporation from the surface of the leaves. I think these facts will convince him that the leaves do perform an important function analogous to pumping or sucking, and I, on my part, am willing to admit that the preliminary filling of the pipes, so as to start what we, for analogy's sake, may call the action of the piston of the leaves, is probably achieved in the way he so well explains.

We must always remember that nature rarely works by single action. In her operations there are usually several processes going on at the same time, or consecutively dovetailing into and mutually facilitating the progress of each other, and perfecting and securing the harmonious relation of the different parts of one great whole. No one explanation, therefore, is likely ever to satisfy all the difficulties of any phenomenon, and it is the great advantage of such discussions as this that they bring to bear upon their subject the powers of different minds, that see things from different points of view.

A. M.

BAMBOOS.

At a meeting of the French Central Horticultural Society, held December 12, 1872, M. A. Rivière detailed the results of his observations on the various species of Bamboos which are cultivated in the State Gardens of the Hamma at Algiers. As these huge Grasses seldom flower, it is, he remarked, always difficult to distinguish the species in gardens; accordingly he applied himself to discover some characteristics by which the various species might be recognised with certainty in the conditions under which they are usually seen. In the first place, with respect to the period at which their yearly growth commences, he divided the genus into two groups, viz., kinds which run at the root, and those which do not. The species of the first group begin their annual growth in spring, as early as April, while those of the second group do not commence to vegetate until summer, the young shoots not appearing overground before July, when they grow with an astonishing rapidity, some of them attaining a height of from 65 to 70 feet before the end of September. The young stem, at its first appearance overground, is conical in shape, and is covered with large sheaths, on the top of each of which is seen the rudimentary leaf; the inside of the sheath, at the point where it joins the rudimentary leaf, is marked by a transverse prominence, more or less apparent, which forms the ligula. An attentive study of these sheaths revealed striking differences characteristic of different species. In the larger species they are of such large size, and so firm in texture, that the workmen in the Hamma make with them very handsome hand-screens, the handles of which are made of the stem of the black Bamboo. These hand-screens (of which M. Rivière exhibited several specimens) are painted in a very ornamental manner. As the plants increase in height, the sheaths become separated from each other, in proportion as the distance increases between the joints of the stem; and, in the greater number of species, they soon become loose at their base and fall off; in many of the species, however, they generally remain until the axillary buds are well grown and push them off. This is particularly observable in B. stricta, B. Simonii, and in Arundinaria verticillata. A distinguishing characteristic has thus been established by M. Rivière in the caducous or permanent nature of the sheaths. The shape of the sheaths forms another distinctive mark. In B. arundinacea the sheath is broadly-oval, almost round, very large, with the ligule entire, and auricled. Another species (B. Hookeriana) which very much resembles and is often confounded with B. arundinacea, differs from it in having much smaller sheaths of an oval-deltoid shape, with a pectinate ligule and a lance-shaped limb. B. vulgaris (known also as B. distorta and B. Thouarsii) has large sheaths, more broad than long, of a triangular shape, with rounded auricles at the base of the broad, triangular, acuminate leaf. B. Mitis, which at Algiers makes a growth of over 50 feet during the month of June, has large, oblong, spotted sheaths, sometimes 20 to 24 inches long and 4 to 5 inches broad, surrounded by a small linear-lance-shaped leaf. B. aurea and B. viridi-glaucescens are often taken one for the other; but the first has sheaths of an oblong, almost elliptical shape, obtuse, and surmounted by a long linear leaf, while B. viridi-glaucescens has lance-shaped sheaths, narrowed almost from their base into a very long point, and terminating in a very small linear leaf. The two last-named kinds may also be distinguished by their internodes (or spaces between the joints), which in B. aurea are short and swollen in the lower part of the stem, but are all elongated and equal in B. viridi-glaucescens. M. Rivière added that the opinion that a Bamboo dies as soon as it has matured its seeds is altogether wrong, his own experience being that the rhizomes of these plants continue to live, and send up fresh stems the following season.

THE ELDER TREE.

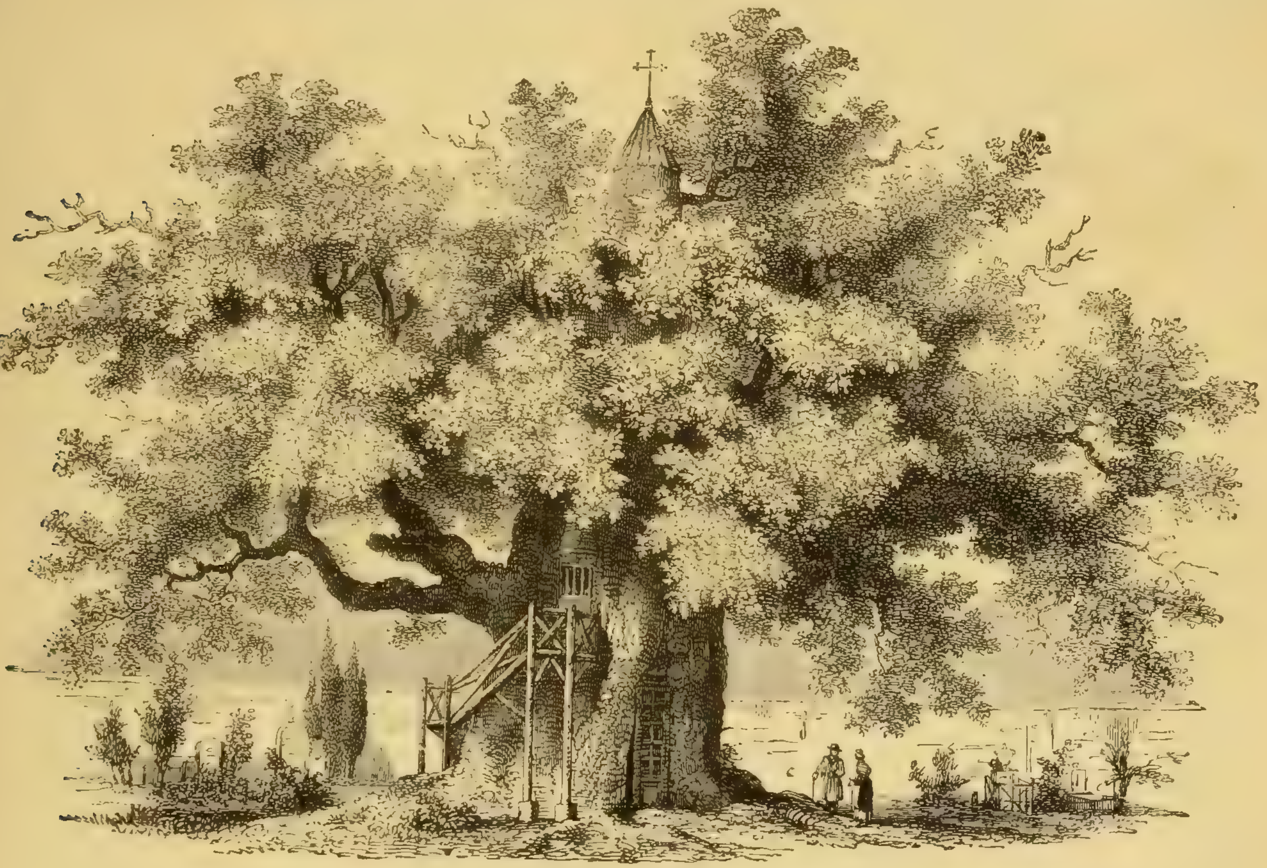
A well-developed, full-grown Elder Tree, ornamented with about a thousand of its enormous creamy-white cymes, seen at a distance, is a noble object, and of this tree there are many varieties, such as the gold, silver, Parsley-leaved, round-leaved, green-fruited, white-fruited, and other sorts. It is not, however, of its beauty, but of its utility I am now about to speak. As a nurse, it is about the hardiest tree with which I am acquainted. In places where the west wind blows for about thirteen months in the year, and where even common Gorse looks as if it were rolled, Elders will grow and thrive, and anybody about to start a plantation in such places would do well, as a preparatory step, to plant the ground in the interior thinly over with Elder bushes, but as thickly as possible along the margin, especially on the windward side. This skeleton plantation of Elder, filled in with timber trees, will have a massive and telling effect. No plant grows so rapidly as young Elder, or so slow when it is old. Elder will also withstand sea breezes as well, and perhaps better, than any other shrub or tree. On the dreary, sandy wastes at Formby, in Lancashire, where the shore is covered with wrecks and the wind nearly always blows a hurricane, may be seen a large, solitary Elder tree, conspicuous for a mile in every direction, growing in the dry sand, defying the tempest, and seeming as much at home as the "tannin," amidst the blocks of "bleak, grey granite," as described by Byron. No other tree or shrub will grow in the shade, or stand the drip of trees better than the Elder. In woods, the darkest and gloomiest spots may be made cheerful and lively by means of the

Elder, planted freely. As cover in woods and plantations, where little else would live, keepers used, in winter, to dibble in cuttings of Elder in all bare, naked places, being well aware of its utility as a plant for "thickening up." Lastly, the Elder makes a good plant for filling up gaps in hedges, especially where they pass under trees, and for boundary fences, where nothing else will grow. It will preserve the continuity of a hedge right up to the trunks or stems of even Beech and Horse Chestnut.—Thos. Williams, *Bath Lodge, Ormskirk.*

THE CHAPEL-OAK OF ALLOUVILLE (PAYS DE CAUX).

This very remarkable tree is a specimen of the common Oak (Quercus pedunculata), which is believed to be about 1000 years old, and is the object of a considerable amount of veneration to the inhabitants of the district, from the circumstance that its hollow trunk has long been used as a chapel. Properly speaking, it contains two chapels, one above the other, access to the upper one being obtained by means of a spiral staircase on the outside, as shown in the illustration. Over the entrance into the lower chapel is the following inscription: "A Notre-Dame-de-la-Paix, érigée par M. l'abbé du Detroit, en 1696."

The tree is now about 50 feet high, its top having been broken by the wind, or cut off, at some remote period, and in its place a sort of bell-tower has been erected, the top of which is about on a level with the highest branches. The lower part of the trunk is more than 11 feet in diameter. The bark, which is of a corky nature and deeply fissured, is upwards of 4 inches in thickness. Although so very old and hollow, the tree still exhibits a vigorous growth, its huge branches, which extend over an area of 2478 square yards, being annually covered with an abundant foliage, and usually bearing a large quantity of acorns. The extraordinary age of this venerable tree renders it impossible to obtain any particulars of its early history. Local tradition, however states that the district was formerly covered by a natural Oak forest, of which the Chapel-Oak of Allouville is now the sole survivor.



The Chapel-Oak of Allouville.

THE INDOOR GARDEN.

CHINESE PRIMROSES.

The Chinese Primroses range in colour from the deepest purple to the purest white. They are improving so fast that it is impossible to specify size with exactness. The largest sort would perhaps cover a crown-piece; they are fringed, serrated, marbled, and ringed, in the most various and beautiful manner; stem after stem, heavily crowned with masses of flowers, rises boldly and to a goodly stature out of their hearts—crowns of glory supported by the beautifully-formed fern-shaped or other leaves. There are double varieties of purest white to purple, with many intermediate shades, forms, and sizes. These are more lasting and useful, though not more beautiful, than the single varieties; but they are invaluable for cutting for vase or bouquet work, which the single ones are not, the flower soon separating from its green calyx when cut. The double will stand a week, a fortnight, three weeks, or more in water, fresh and sound as at first; and for bouquets, the Double White rivals in usefulness the Camellia, Stephanotis, or Gardenia. Scarcely any plants can be easier grown than these Primroses. Properly treated, their natural season of flowering may be said to be from November to April. The sun, so essential to most flowers, may be said to be unfavourable to these; as he gains strength they, unless shaded, lose beauty and freshness. But in winter and early spring they glow with a beauty, shine with a brilliancy and purity of colouring, almost unequalled. All the single varieties are best treated as annuals. After flowering, throw the plants away. Seed saving needs special skill in selection and management, and the amateur or lady gardener, unless an enthusiast, had better not attempt it. Any respectable nurseryman or florist will supply good seeds. Sow in light soil—peat or loam with a fourth part of sand—in February or March; cover the seed with an eighth of an inch of soil, and keep it rather dry until it begins to grow. As soon as the plants can be handled, prick them out, about six round the edge of a 60 or 48-sized pot, in similar soil, with 2 inches of drainage in the bottom of the pots. Place them in a cold pit. When well rooted, shift into single pots, and again into larger as the pots become full of roots, using for the last shift a 5-inch or 6-inch pot. No single Primrose need have a larger pot than a 6-inch one. For the last shift two parts turfy loam, one of peat or leaf mould, and one of thoroughly rotted cow-dung, form a suitable compost. Add about a sixth part sharp silver sand; if this cannot be had, clean river or road sand is the next best. Beware of using pit sand with any iron in it, as the plants are impatient of this. The drainage should be carefully adjusted, as stagnant water is death to the plant, especially in November. The collar of the plant must also be kept well up in potting, and, as this is apt to leave the neck rather loose, it is good practice at the last shift to stick in three pegs of wood to form a triangular holdfast, to preserve the neck from moving about or from being wrung off by the wind or other accident.

During the summer months a cold pit, open night and day, is the best place for the plants; or from the end of June to the middle of August they might stand in a sheltered place out of doors—not, however, in wet seasons or localities, as the plant is always impatient of water overhead. It is better to draw the lights off in fine weather, and to place them on, tilted up, during rain. Either way, place them under glass in September. In October they will be coming into flower. Through November, December, January, February, and March, they will continue to lighten up room window, boudoir, and conservatory. A temperature of 45° to 50° when in flower suits them best; but they will flower well in any temperature above 40°. The frost, however, must not come nigh them; also, next to frost, their greatest enemy is damp. See, a drop has fallen into the heart of that plant; another; yet it looks all right. What a noble plant it is!—one, two, three, six flower-stems coming up stout and strong! What is that nestling over the base, like lace of the most exquisite pattern? Mildew fungus? It is all over with that plant. In removing it the whole heart comes out, with its goodly flower stems rotted through at the neck. See there is a leaf lying down on the surface of that pot in an unusual position. Lady Violet brushed it with her dress in passing? No, something with a softer tread and a gentler footstep has crushed it. A few molecules of aqueous vapour condensed upon that leaf-stalk, coalesced and fraternised, rolled down to its base by the law of gravity, and settled there; mortification followed; and not only the leaf but the main stem is now a putrid mass of decomposed vegetable matter—the plant is ruined past recovery. There are a number of dead flowers clustering around the top of that glorious truss. Off with them at once. See, where each rested there is a gangrene on the stem, and part of the truss is already decomposed.

These are not imaginary cases at all; on the contrary, they are sober facts. The lessons from them, too, are equally obvious. Not a drop of moisture in the heart, nor on the leaf-stalks, nor near the collars, if you would preserve Chinese Primroses in beauty or prolong their lives. Hence they must on no account be syringed, and in watering water the earth only; wet neither crown, nor leaf, nor leaf-stalks if it can be avoided. A pot with a turn-down spout at the end is the best. But lacking this, by a skilful use of finger, thumb, or hand the whole of the plant may be kept dry while the earth, with its full complement of roots, is well watered. The plants need a good deal of water, and the flowers become larger, the colours more bright, if half an ounce of guano to the gallon be added. The water should be of a temperature of 50° as near as may be. The plants can hardly have too much air at all times when the outside temperature is above 40°. When below that, little or no outside air must come near them. The double varieties are increased by cuttings, and in all other respects may be treated like the single ones, only they enjoy 5° or 6° more heat. There is no reason in the nature of the plant, or in any difficulty incident to its cultivation, why every sitting-room window in the kingdom, from the cottage to the palace, and all between even these wide extremes, should not be enlivened during our dull and dreary winter months by the cheerful glow and spring-like beauty of the Chinese Primrose. D. T.

THE CAMELLIA AS A WALL PLANT.

Apart from its blossoms, the Camellia is one of our richest evergreen shrubs. When in perfect health its greenness is so dense and dark as to be felt as well as seen. The shape of the leaf and habit of the plant are likewise all that can be desired. It grows without trouble into forms of grace and beauty that in other plants are seldom reached at all, or are only attained after the most skilful and constant manipulation. The leaves are likewise of good substance, and are as lustrous as if they had been dipped in varnish. This helps to keep them free from dust, and renders them easily cleaned. Further Camellias are by no means liable to insect enemies; green fly will occasionally settle upon the tender wood as it is forming, and mealy bug and scale will occasionally crawl over them from Orange trees or other plants with which they may be associated, but they never seem at home on Camellias; and if the culture is liberal and the care painstaking, they are among the cleanest plants grown. The leaves are too tough for spiders or thrips, and nothing but the grossest neglect in their cultivation, or the setting of the plants in the face of the sun, or in a roasting, dry atmosphere, could give these small fry a foothold on Camellias. As yet I have only alluded to the beauty of the leaves; what, therefore, shall I say in reference to that of the blooms—so rich in colour and perfect in form. Take Camellias for all in all, no tribe of plants in the dead season can match them. They are also accommodating as well as beautiful. They are cheap, hardy, and easily managed. They even thrive best where many other plants refuse to grow to any useful purpose, viz., on back walls of conservatories, corridors, and passages. I have even seen some noble plants on the shady walls of semi-opaque Orange-houses. Some contend that Camellias can hardly have too much light, an opinion with which I coincide, provided they are not burned by the direct glare of the sun. But it is equally true, as has been said, that they thrive well in shady places, with little or no direct sunlight. Many of the finest Camellias are to be found on the back walls of lofty conservatories, far from the light, and the little that reaches them has to make its way through drooping pendants or wreathed masses of Passion-flower, Lapagerias, Tecomas, Tacsonias, Mandevillas, Ipomæas, and other climbers; yet thus overhung the Camellia flowers with a freedom and brilliance of colouring only equalled in brightness by that of the Pelargonium and the Rose. Camellias may be said to have solved one of the most difficult problems in horticultural architecture, viz., the clothing of the back walls of temperate houses (and the fronts for that matter) with life and beauty. In the Camellia house, full of noble trees grown by Mr. Barnes, at Bicton, not only was the house kept full but every pillar, &c., between the lights in front was clothed from base to summit with a secondary screen of Camellias, dense, glossy, and brilliant. I have also seen panelled walls admirably furnished with Camellias at different places, each panel containing a plant, and the pillars and other projections between being furnished with varieties of different colours. The contrast between the endless shades of red, pink, and white, by this mode of furnishing, was admirable. Each plant occupied its appointed place, and was made to fill it without overcrowding its neighbour.

Cut Camellias back when and where one will they soon push forth new shoots; but the best time to cut Camellias is the moment they have finished flowering—nay, even when they are in full flower; for by the time the blooms drop the wood-buds in many varieties are in full growth. They will bear cutting even when in this condition, but these broken buds represent a loss of growing force. Had the shoots been cut back before, that force would have been utilised. How far, it may be asked, should they be cut back? Well that depends upon circumstances. But all the terminal buds or flowers of Camellias may be cut with sufficient stalk for bouquets or vase decoration. The pruning must in fact be made subservient to the furnishing, that is, cut back to insure regular clothing of the wall from the base upwards; but if the space is already full, then cut back to keep it so. Of course all severe cutting must be deferred until the flowering period is over; unless, indeed, some large branches are wanted for dinner-table or drawing-room decoration. Camellias in the form of free branches are rich and charming beyond most flowers. In single blooms, however rich, it is difficult to avoid flatness; but with branches one can do anything in the way of room decoration. And if they are preferred in rooms to being on plants, either in the conservatory or on walls, why to rooms let them cheerfully go. I would only put in one condition in the interest of their owners, viz., always let the growers cut the flowers, and for this simple reason, that in cutting we can and do kill two birds with one stone—we cut for the present and for the future. Gardeners, however, will often neither cut their best flowers themselves nor allow (the word is hardly too strong) their owners to cut them. This feeling, when allowed to run to excess, sadly mars the enjoyment of a garden, and hinders its smooth and peaceful management. All I ask is that we may be permitted to cut with our own hands our best, richest, and sweetest treasures for our employer's use, simply because we can do it with the least amount of injury to the plants, and can cut for a continuous supply of flowers.

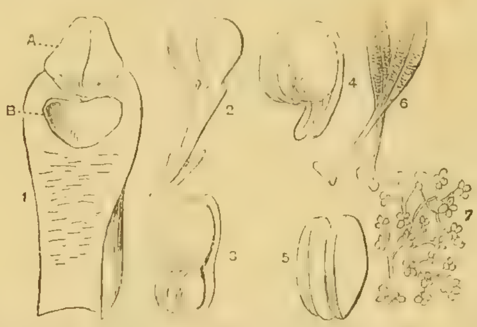
What I have said about cutting relates only to Camellias and other choice plants. Every lady or gentleman who has a taste for cutting and arranging flowers will of course have free scope among Roses, Carnations, and all manner of flowers of that kind, where they may cut and come again without any cold looks from those who are held responsible for the perfect furnishing of other departments. Of course the cutting of flowers may easily be carried to excess. But, after all, employers must be the judges; and if they like the excess, what matters it to us? And in regard to Camellias, I had almost written the more flowers cut off them the better. Of course the more cut the fewer on the wall or on the plants; but even that may prove an improvement. I have seen noble plants of white, and red, and pink Camellias, on walls and off, made to look better by having half the flowers taken off; this enabled the leaves to come in between and soften down the dazzling blooms. D. T. Fish.

HYBRIDISING ORCHIDS.

There is nothing particularly difficult in the mere mechanical operation of fertilising Orchids; for, in the generality of cases, the pollen has only to be applied to the stigma in order to induce fruitfulness. It may, however, be as well to note that both the pollen and stigma vary in structure and general conformation from those of most other plants. The pollen masses are of a waxy consistence, and may be reached by removing the little cap (anther) at the end of the column. The stigma, or stigmatic surface as it is generally called, lies immediately beneath the apex of the column, and is often of considerable size. Any small point, such as that of a quill toothpick, may be used to remove the pollen, and to place it in the stigmatic cavity. The pollen masses of some genera are furnished with a viscid or gummy disc, which readily adheres to the point used. The pollen masses, however, of some Orchids, such as Cattleyas, and especially Dendrobiums, will not readily adhere to the point used; but to obviate any little difficulty this may occasion, insert your toothpick into the stigmatic cavity, when it will become coated with the viscid matter or mucus therein contained, and to which the pollen masses will readily adhere, no matter how dry and glossy they may be. In a few hours after the flower is fertilized, it commences to wither, and an interesting change takes place with regard to the stigmatic cavity. This cavity is widely distended previous to fertilisation, but as soon as that actually takes place, the sides begin to contract, and finally close in on the cavity, in some cases even overlapping, and thus effectually preventing the possibility of the pollen being removed by insect or other agency, or becoming damaged by water or other foreign body coming in contact with it. The ovary enlarges rapidly after fertilisation; the capsules of Phalænopsis, which are rarely half an inch long before that takes place, attain a length of from 4 to 6 inches, and the thickness of the little finger, in about sixty days after that has taken place, and contain many hundreds of minute ovules. The great difficulty, however, does not lie in the mere fertilisation, but in obtaining a fair percentage of good seed; and, as before mentioned, it is requisite for the parent plant to be in the highest state of health, in order to produce seed in good condition.

After many careful experiments, I have come to the conclusion that perfect seeds are produced much more rarely than is generally supposed; indeed, I believe Orchids produce good seed but very seldom, and to this may be attributed the many failures that cultivators have experienced in their attempts to raise hybrids. When Orchid seeds are obtained, they should be examined under a good microscope; if they are perfect, the nucleus ought to be seen beneath the translucent, membranous, reticulated testa or seed coat. If the nucleus is not developed, it is useless to expect germination to take place we might as well expect to obtain a batch of young Ferns after having sown the empty spore-cases, which last is far from being an uncommon occurrence. Not forgetting what has already been achieved in the way of hybrids, it will be generally admitted that as cultivators we have still much to learn, in so far as the raising of Orchids from seed is concerned. That which has already been done in this direction ought to induce those who have the opportunity to undertake more extended researches—take, for example, * Calanthe Veitchii, one of the most beautiful Orchids at present in cultivation, or * Cattleya exoniensis, together with * Cypripedium Harrisianum, or * Cypripedium (Selenipedium) Dominianum. Two growers at least have succeeded in rearing seedling plants of the beautiful and rare Cypripedium (Selenipedium) Schlimii, viz., M. Leroy, Passy (France), and Mr. Pilcher, gardener to S. Rucker, Esq., of Wandsworth. Perhaps the most brilliant success has attended the patience and perseverance of Mr. Dominy, of the Royal Exotic Nursery, Chelsea, who has succeeded in crossing several genera, amongst which may be mentioned Phajus with Calanthe, and Calanthe with Limatodes.

I have here compiled a list of hybrid Orchids, with their parents, where known. More might be added, but this is sufficient to show that much has already been done; and we may fairly ask, have these results done nothing for botanical science? By hybridisation and grafting we may prove the natural affinity of plants far better than by poring over herbarium specimens—if not so quickly, with far greater certainty. Unfortunately for horticultural science, neither Mr. Dominy nor Mr. Pilcher have as yet given us the details of their successful experiments.



1. Column of an Orchid. A, anther; B, stigmatic cavity. 2. Pollinia of Vandæ (Burlingtonia). 3 and 4. Pollinia of Epidendreæ (Lælia and Cattleya). 5. Pollinia of Malaxideæ (Dendrobium). 6. Pollinia of Ophrydeæ (Disa). 7. Pollen grains separated by maceration, and seen under a microscope.

Hybrid Orchids.

Calanthe Masuca.
*Calanthe Dominii.
Calanthe furcata.

Limatodes rosea.
*Calanthe Veitchii.
Calanthe vestita.

Cattleya granulosa.
*Cattleya hybrida.
Cattleya Harrisoniæ.

Cattleya Mossiæ.
*Cattleya exoniensis.
Lælia purpurata.

Cattleya amethystina.
*Cattleya irrorata.
Lælia elegans.

Cattleya Aclandiæ.
*Cattleya quinquecolor
Cattleya Forbesii.

Cattleya Loddigesii.
*Cattleya Brabantiæ.
Cattleya Aclandiæ.

Cattleya (Lælia) crispa
*Cattleya Sidneiana.
Cattleya granulosa.

Phajus grandifolius.
*Phajus irroratus.
Calanthe vestita.

Goodyera discolor.
*Anæctochilus Dominii.
Anæctochilus xanthophyllus.

Goodyera discolor.
*Goodyera Veitchii.
Anæctochilus Veitchii.

Aerides affine.
*Aerides hybridum.
Aerides Fieldingii.

Cypripedium Pearcei (caricinum).
*Cypripedium Dominianum.
Cypripedium caudatum.

Cypripedium barbatum.
*Cypripedium Harrisianum.
Cypripedium villosum.

*Cattleya Pilcheri.

*Cattleya Devoniensis.
*Cattleya Dominiana.

Cattleya Mossiæ.
*Cattleya Manglesii.
Cattleya Loddigesii.

Talking of sowing Orchid seed, here is a recipe from the pen of the late Donald Beaton:—

"Get the seed-pod of an Orchid emptied on a piece of smooth paper, the seeds being as small as the dust in a sunbeam. Take a very clean No. 32 pot, and put a No. 60 pot upside down over the hole at the bottom, and put a piece 2 inches square of ragged turf of fibry peat over the hole of No. 60. Then take four pieces of rough, cracked charcoal, 3 inches or 4 four inches long, and half that in width or thickness, place them on their ends against the sides of the big pot at equal distances; put your finger on the bottom hole outside, and fill the pot with water, holding the pot in the left hand. Now sow the seeds on the water, and breathe against it till the whole surface is equally dusted. Then begin to let off the water from under your finger by the bottom hole very, very gradually. As the water subsides in the pot, the seeds will stick to the sides of the pot, the peat, and the charcoal, just like so much of a tide mark. When the water is all off, place the pot in a saucer of water, with an inch deep of water in it, and hold it to that point till your seedlings are safely on the wing; put two twigs across the mouth of the pot, and put a square of glass over the twigs, so as to leave a space for air all round the thickness of the twigs. Put the pot where it will not get more dry than it is now, and where the heat is at Calcutta point; and if 99 out of every 100 of the seeds will not vegetate, and that very soon, why the pollen has not given them the germ of life. I brought 1000 Orchids into this world just that way, but, truth to say, they all of them found the means of getting out of the world by a route I never could fathom."

Another is as follows:—

"I have seen ripe seed-pods hanging abundantly from Broughtonia sanguinea, from Angræcum funale, and from some of the Oncidiums and Epidendrums in Jamaica; and as we know, of course, that all the species are naturally reproduced from seed, horticultural science ought to be able to solve the problem of their reproduction here. May we not look for seed packets of the epiphytal Orchids to be advertised for sale before many years as regularly as Balsam and Primula seed, if not quite so cheaply?"

Perhaps the best manner of raising seedlings is to sow the seed as soon as ripe, on the surface of pots or blocks that are covered with living Sphagnum. If the seeds are good, in all probability some few out of the thousands that each capsule contains will make their appearance. The time they take to germinate appears to be very uncertain, some requiring only two or three months, while others remain as many years before they show themselves. Disa grandiflora is one of the easiest to obtain from seed; a friend informs me that he has hundreds of young plants from a single pod. Cypripedium, also, appears to germinate readily, three or four hybrids having already been obtained.

As a matter of course it cannot for a moment be supposed that seedling Orchids will supersede imported plants, provided we can rely on the stock abroad holding out; and we know that there are some Orchids rare, even in their native habitats—Phalænopsis intermedia Portei, P. Lowii, and the beautiful Aerides Schrœderi (A. crispum var. Schrœderi) being amongst the number. Again, it cannot be denied that some considerable time must elapse ere seedlings will reach a flowering condition, but this in practice would not prove a serious drawback, since if seedlings were reared year by year there would always be some in a blooming state. In the case of seedlings, there is always an uncertainty as to what they may eventually prove to be, but should they turn out distinct, there can be no doubt but that, in a pecuniary point of view, the rearing of them would be a decided success. Doubtless, when the germination of Orchid seeds is better understood, hybridisation will give us many other new and beautiful varieties.

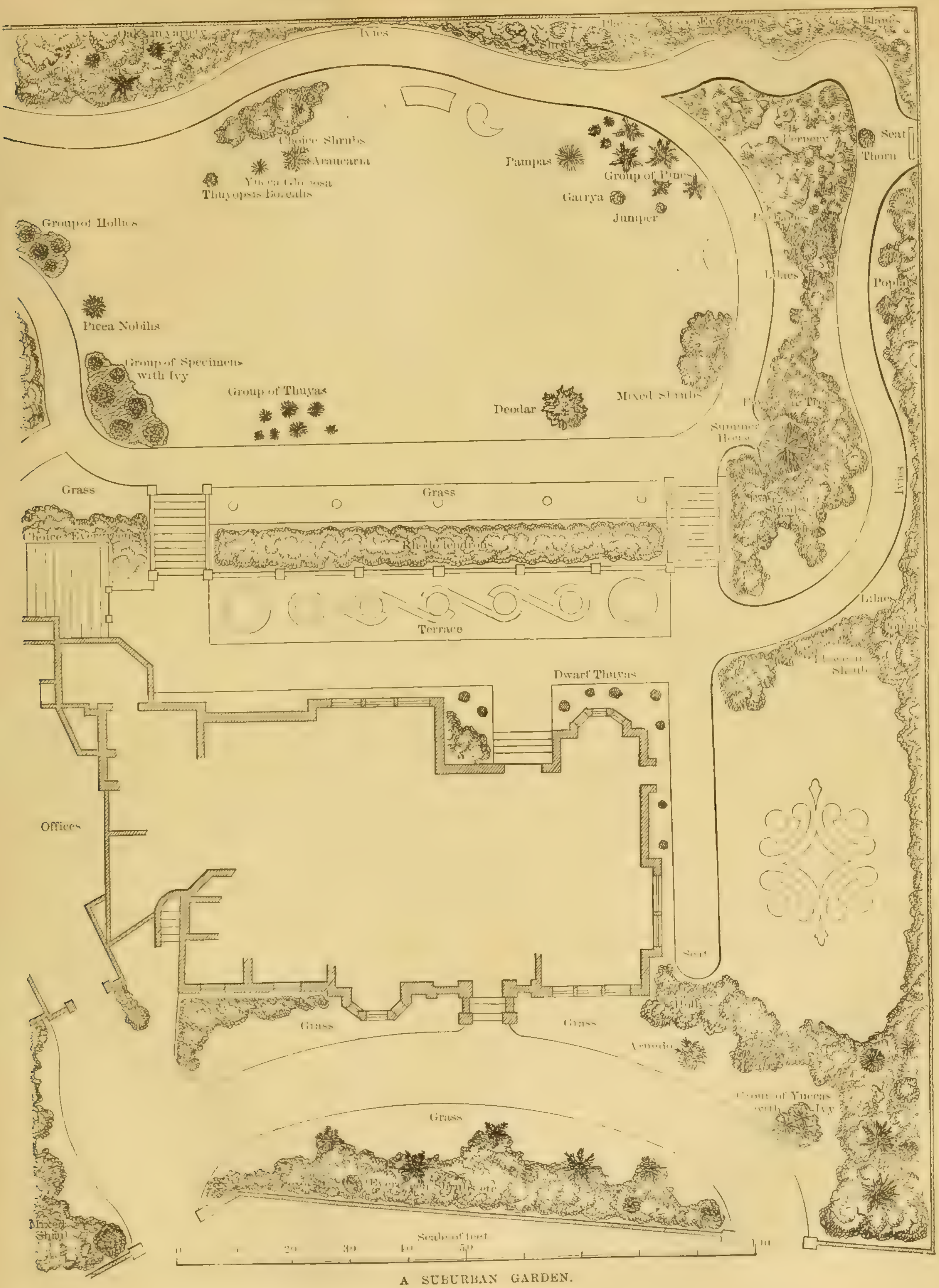
How are we to account for the many varieties of Cattleya Mossiæ, unless crossing by insect agency has taken place in their native habitats, and these plants are seedlings? If the seed, then, germinates abroad, why is it so difficult to manage here at home? If we look at what has already been effected, we shall see that our list of hybrids does not include many genera,—Cattleya, Cypripedium, Goodyera, Phajus, Calanthe, Lælia, Anæctochilus, Aerides, and Limatodes being all. Dendrobiums have been raised from seed, in an Orchid establishment near Manchester, but whether hybrids or not I cannot say. There would appear to be a natural affinity between Calanthe and Phajus, seeing that they cross most readily, although botanically one belongs to the Vandæ and the other to Epidendreæ.

F. W. B.

A SUBURBAN GARDEN.

The garden of which we this week publish a plan is one of a very numerous class, which is daily increasing too, and of which good models are very desirable. The plan shows the ornamental portion of the gardens at Everleigh, the residence of Dr. Andrews, and, as will be seen, is limited in size—all the greater reason why no pains should be spared in its design. If in casting an eye over the plan we begin with the strip of planting which screens the house from the road, we see a free and well broken margin, the very reverse of the common stiff, straight, or curved one. On such irregular margins it is a very good plan to further vary the edge by planting dwarf shrubs or herbaceous plants on the grass, beyond the earth-line of the plantation. This plan has within a few years past been adopted in some of the London parks. On the other side of the entrance drive also the group of Yuccas on a low mound, with a carpet of Ivies beneath them, is worthy of a word of praise. The Ivies do away with the necesssity of mowing or otherwise interfering with the surface of the ground beneath the Yuccas, and both subjects are green and effective throughout the year. On the lawn is a group of specimen shrubs, with a carpet of Irish Ivy beneath them. This, or indeed any other ornamental carpet, is much better than the ordinary bare surface usual beneath shrubs. The lawn, for its size, is open and embellished with choice groups of Pines, and the lines of sight through it are so disposed that the best obtainable views are secured. The system of using the names of the plants, &c., instead of numerals in the plan, renders any further allusion to the planting, &c., unnecessary. The garden has been designed and planted by Mr. E. T. Chamberlaine, of Haverstock Hill.

Tithe Commissioners and Newly-Cultivated Land.—Those who have lately called attention to the "reopening of the tithe settlement" are certainly fortunate in many of the instances of this reopening which they are able to bring forward. If anything were wanted to convince the public of the intolerably vexatious results which the Act, as now judicially interpreted, will produce in the future, it would be only necessary to consider those which have already taken place. A correspondent of the *Times*, after stating that the result of an "expensive and laborious inquiry before the Assistant Tithe Commissioners, extending over eleven days," was only to bring some five acres of land under the "extraordinary charge," proceeds to give a brief description of the pieces of land thus convicted of being "newly cultivated." No. 1 consisted of half an acre lying within a hundred yards of the sea. The tenant broke up a piece of old turnpike road which used to run through it, cleared the sand off another portion of the plot, and grew in it in rotation Broccoli and Asparagus. It forthwith became a "market garden," with all its portentous consequences of contributing to bring an Assistant Tithe Commissioner down from London to make the whole parish subject to an extraordinary tithe rent-charge. No. 2, less than half an acre, was part of a very rough furze croft, and was given to a labourer rent free for some years to "bring in." He bestowed much labour on it early and late, and grew on it last year some early Potatoes and Broccoli. It is now to be declared a "market garden," with all its consequences, one of which will certainly be to prevent any other labourer from having the advantage of other portions of the same rough ground rent free. No. 3, about three-quarters of an acre, was another case in which portions of a disused road had been broken up with much labour, and Broccoli and Potatoes substituted for granite. The owner of this has rendered himself liable to an extraordinary charge in respect of the "market garden" thus formed. No. 4 was a patch of ground covered with furze and stones, which had been reclaimed at a cost of £40 an acre. It was now used as a Potato field; and a Potato field is a "market garden," according to the latest interpretation of the Act, and subject as such to the enhanced charge.



A SUBURBAN GARDEN.

THE FRUIT GARDEN.

BARREN OLD FRUIT TREES.

This is a subject upon which a great deal has been written, but which is capable of explanation in very few words. In the great majority of cases the pruner was carrying on a perpetual and most unprofitable war with nature by cutting in and in the whole young growth of a fruit tree, and keeping it to a very much dwarfer compass than it would naturally attain to, but never touching the root at all. The result was, that the trees grew as most plants do when cut down, *i.e.*, burst up with renewed vigour in very stout, watery shoots, which, however, are never fruit-bearing, but which would ramify into and support what ought to be fruit-bearing wood in a few years. In the case of garden-wall trees, &c., this was cut off every year; and so went on the ruinous war between man and tree. In our climate generally Pears, Plums, and other fruit trees are apt to run too much to wood rather than to a compact free-fruiting state, from want of sun and heat in autumn to ripen the wood and induce fertility. But if the bottom or subsoil is good, trees left to themselves, and allowed to exist with the natural balance between the root and branches, often bear abundantly and satisfactorily without any attention. It is mostly in wall trees, &c., where a heavy system of annual pruning, or rather lopping off, is practised, that the worst results are observed. By taking up the trees quite out of the ground, and root-pruning them, the useless vigour of the tree is checked, and its energies turned from the production of willow-like shoots to delicious fruit. In numerous cases I have seen an abundant crop of fine fruit produced by Pears and Plums the very season after this root-pruning had been performed, upon trees from which nothing had been gathered for years previously. The result is nearly always satisfactory, and common sense would lead one to expect it. Poor soil induces vegetable life to devote its energies to the production of fruit and seed, while stature and luxuriance can only be secured by liberal treatment.

We may observe how, on poor sandy soils, some of the common annual weeds become a mass of inflorescence and fruit, while on rich ones they are green, fleshy, and comparatively flowerless. Of course, it would be very unwise to apply this principle of moderation in rich food to things that we want to furnish leaf and stem and succulence to the kitchen—Asparagus, Rhubarb, Celery, &c., to wit; but it must be practised in the case of fruit trees. The way to root-prune these barren subjects is to first dig a semi-circular trench at about the distance to which the outer roots are supposed to extend, using for this purpose those elastic and slender-tined forks which have so much facilitated such operations of late years—Park's forks, as they are usually called. A spade would of course cut off the fibrous roots everywhere it met them. When the trench is sunk as low as the roots (in old plants which have gone deep it may require to be sunk 3 feet), the operator must work in towards the stem of the tree, undermining the roots and turning them back as he goes on, till the base of the stem is reached, and the tree taken up as carefully as possible. Then the very strong roots must be shortened or cut off; but the mere taking up of the tree does nearly all that is necessary in this way, as those roots (if any) that go straight down are destroyed when the tree is taken up; their stumps, however, should be cut out, retaining all the roots that have a spreading tendency and a disposition to remain near the surface. This effected, level in the ground again, and lay a few barrows of chopped turfy loam over the surface on which to place the roots, arranging the whole so that the roots will be little, if at all, below the level of the surrounding ground. When the specimen is placed in position, and the roots laid out naturally, a little more of the good turfy loam must be laid over the roots, and over that some of the ordinary soil of the border. Leave the tree loosely supported against the wall till it has sunk as far as it is likely to sink. It would be well to make the ground pretty firm before planting, and thus prevent this after-sinking to a great extent. Root-pruning has various phases, but these remarks apply chiefly to those large, old, and vigorous but useless trees so often seen in gardens. V.

VARIATION AMONG FRUITS.

Horticulturists frequently find among cultivated fruits and flowers strange variations from the original or normal types of varieties, and these are termed freaks or sports. When we raise fruits or plants of any kind from seed, we expect that the seedlings will vary more or less, for it is by this process or mode of propagation that most of the varieties in cultivation have been produced. Varieties usually remain unchanged, during any number of generations, the same as species, and we go on propagating them by the usual methods, such as grafting, budding, or cuttings, confident of preserving their distinct and peculiar characteristics. But during the course of propagation, which often extends through many centuries, it would not be strange if there should occasionally occur causes sufficient to produce a marked change in the general habit of some one individual plant among the many thousands. That certain "sports" or variations have appeared among all of our leading and more commonly cultivated fruits, is well known to every pomologist. The causes are generally unknown, and we can only guess what they might have been from the little we know of the structure of plants. The boring of an insect into a twig may cause the leaves upon it to change from their natural to some other colour, and should this continue more than one season, the peculiarity may become partially fixed, and by propagating from the injured twig the nurseryman stands a chance of perpetuating the "sport." Sometimes a change in soil, climate, culture, diseases, or insects produces a marked effect upon the fruit of a tree; so much so that those well acquainted with the variety in other localities will fail to recognise it, and when trees are under these extremely favourable or unfavourable conditions they are likely to produce what are termed bud variations, that is, a single bud will produce a shoot varying from others on the same tree, either in the form of leaf, habit of growth, and sometimes it extends to the fruit, which will be very distinct from that on other branches of the parent tree. These bud variations are extremely rare, at least those of such a marked character as to attract the attention of pomologists, but an occasional one appears, and is perpetuated by some one of the various modes of propagation. Curious sports also appear among seedlings, and they are probably far more common than sports among well-established varieties; but as the seedlings of fruit trees are mainly raised for stocks, few survive or come to maturity, and it is only among the old seedling Apple, Pear, and Plum orchards that we find specimens to support and prove our theory, that sports occur among these fruits, as well as among ornamental trees, shrubs, and other plants.

SWEET AND SOUR APPLE.

This is a very old variety, and its origin is unknown. The fruit is large, oblate in form, somewhat ribbed, colour green, not unlike the Rhode Island Greening; but, when it begins to ripen, the ribs remain green and the spaces between them yellow. The green portions are quite acid, the yellow sweet or almost flavourless—hence the name. Sometimes the sweet and sour portions will be in alternate quarters; in others, one-half of the Apple will be sour and the other half sweet, scarcely any two specimens from the same tree being exactly alike in this particular. Now, there has been more than one claimant for the honour of producing this variety, and the boldest of them have asserted that it was produced by uniting two halves of two buds or grafts, one being taken from a sweet Apple tree and the other from a sour. In the first place, any such result as claimed from such a union is an impossibility, and no man knowing anything of vegetable physiology would talk in this nonsensical manner; because, even one-half of the smallest bud, with sufficient wood attached to ensure its growth, would contain hundreds of plant-cells, each of which is capable of perpetuating the individual characteristics of the parent stock. If a bud or scion were made to unite and produce a branch, every bud and twig on either side would remain true to the parent stock, and there could not be any intermingling or conglomeration of the cells or their contents. Scientific pomologists have tried such experiments over and over again; then why should any one believe that an ignoramus in such matters could or did succeed. But the ripening of the fruit destroys and contradicts this story of dividing the bud or scion in halves to produce it, because the sweet and sour portions are seldom found in this form. This variety is only one of the innumerable "sports" among Apples, and has been perpetuated more as a curiosity than for its intrinsic value.

FLOWERLESS AND SEEDLESS APPLES.

Several times within the past few years Apples have been shown which contained no seed, and it was also claimed that the trees never produced any flowers. But the specimens exhibited had upon them the usual shrivelled calyx which is the essential part of an Apple blossom. There were also pistils plainly to be seen, consequently these facts proved that the Apple tree which produced the fruit shown did bloom. It is quite probable that the petals, which are the most showy part, but least essential, were either very small, deformed, or entirely wanting. The pistils, stamens, or ovaries, may have been deformed, hence the absence of seeds, the same as we find in many of our largest and best developed sorts. The flowerless Apple tree producing fruit is, therefore, a misnomer. The Apples mentioned above came from Pennsylvania, and were considered a great novelty, not only by the owner of the tree, but by many members of the press, judging from the notices this variety has received. It happens, however, to be no novelty either in this country or abroad, as such sports have often appeared. In the Annals of the Linnean Society of Paris for May, 1824, M. Tillette de Clermond described a similar variety found in Normandy. The tree was then supposed to be about forty years old, and it had constantly produced flowers composed of an external and an internal calyx, pistils, but neither stamens nor corolla (petals). The fruit was even more wonderful than that from Pennsylvania, for the Apples were said to vary in size, colour, form, and flavour.

OTHER SPORTS.

Apples which never produce seeds, or possess scarcely any trace of a core, have been found in various localities. The trees produce showy blossoms in some instances, but the pistils as well as ovaries are deformed. These may be placed among the permanent varieties which originated from seed, and not among the bud variations, springing from branches of other sorts. Perhaps the most curious sport discovered within the past few years is that of a tree which had always borne a very smooth green Apple, suddenly producing upon one of its branches beautiful russet fruit. In some instances one-half of a specimen was russet, and the other half smooth, the line of demarcation between the two being as clearly defined as though struck in a lathe. The branch has produced this kind of fruit two years in succession, and it is quite probable that scions from it would perpetuate the sport. Many other sports among Apples might be named, but I think enough have been mentioned to show that such things are neither novel nor new.—*A. S. Fuller.*

VINES ON OPEN WALLS.

AN article by "B. S.," in THE GARDEN, page 75, on "Growing Vines on Open Walls," is so much to the purpose that I wish to add a few more varieties to his list, which I have found, in practice, adapted for the purpose. There is no doubt that, in ordinary warm summers, good Grapes can be ripened on open walls, either fit for the dessert or for making wine. A selection, however, of the earliest ripening varieties is required for this purpose, and I have found the following the best, namely, for white sorts—the Malvasia, synonymous with Grove-end Sweetwater and early Kienzheim, of the Horticultural Society. This is the earliest ripening white Grape I have grown. The Precoce de Malingre is the next in earliness, to be succeeded by the Royal Muscadine, named the Chasselas de Fontainebleau by the French, and the early Smyrna. Of Black early Grapes, the old Miller's Burgundy is, perhaps, the earliest for ripening, but the bunches are small and worthless, except for wine making. The Chasselas Noir is the earliest good black Grape; Sarbelle, a small rich Grape of the Frontignan section, and which ripens early, to be succeeded by the Esperione, the best black early Grape for the general crop. As the soil and borders have a great effect on the success of growing Grapes in the open air, some attention should be paid to have the borders properly made when the Vines are planted. Where the subsoil is strong and damp, the bottom of the border should be concreted, or filled up with old broken bricks and lime rubbish, or ashes, and the soil used any light calcareous sods from the roadside or commons, with any good light loamy or sandy garden soil. The Vines ought to be planted on mounds, so that additions could be made to them by manurial materials from time to time. There are other situations for growing early Grapes on, which are often disfigured by growing worthless fruit trees or creepers on them, namely, the south aspects, on cottages and farm buildings. There is not a more cheerful and graceful plant than the Vine when in full leaf; and when loaded with its ripe, luscious bunches in very warm summers (which, alas! only seldom occur), there is no fruit tree in the open air to compare with it; the only drawback to its culture in the open air is when the fruit begins to get ripe, that wasps, blue-bottle flies, and birds require a deal of attention in preserving the bunches from their ravages. From "B. S.'s" experience with muslin bags, which preserved the bunches of his Precoce de Malingre, cultivators can always have a chance of saving their crop. With a good crop on a wall, however, some breadths of the Nottingham hexagon netting spread over the bunches would answer the same purpose, and take less trouble in fixing it than making muslin bags. WILLIAM TILLERY.

Influence of the Stock on the Produce of the Scion.—M. Decaisne (see page 133) is wrong in stating that fruits are uninfluenced by the stocks on which they are grown. As a striking case in point, I would cite the change effected in the size and earliness of Muscat Grapes by being grafted on the Trebbiano, as seen at Trentham. I have also seen the Madresfield Court modified in colour, form, and quality by being grafted on a white stock. I commend these facts and others of a similar kind pertaining to Apple stocks to the notice of M. Decaisne and others who think with him that the stock has no power to ameliorate or alter the character of fruit.—D. T. FISH.

Variations in regard to Pears.—In France alone about 800 sorts of Pears can be counted the origin of most of which is unknown, and many are undoubtedly very ancient. Indeed, according to Jordan and his school these differences are primitive, and the so-called races and varieties, both of wild and cultivated plants, represent so many closely related species. M. Decaisne, not content with the *reductio ad absurdum* of having about 2000 species of Pears to be dealt with, proceeded to an experimental demonstration of the variability of the cultivated races. He sowed the seeds from four very distinct varieties in 1853, the Poire d'Angleterre, Beurré Bosc, Belle Alliance, and the Cirole. Of the last the four trees raised bore fruit of four different forms. From the Belle Alliance he obtained, in this first generation, nine new varieties, none of them representing the parent, neither in the form, size, colour, nor even the time of ripening of the fruit. The Beurré Bosc equally produced new varieties. Of the Angleterre nine trees produced as many new forms, one of them a winter Pear similar to the Saint Germain, another Apple-shaped fruit identical with one which was raised from the Belle Alliance.

No Profit in Dwarf Pears.—We take the following from a letter in *The Country Gentleman*, descriptive of the fruit farm and practices of D. W. Coit, of Norwich, Connecticut :—"Dwarf Pears have been very thoroughly tested by Mr. Coit, in an experience of twenty years, and are a failure except for amateur purposes. They bear much earlier than standards, and the fruit is quite as large and well flavoured. But unless the roots strike out from the Pear wood above the Quince roots, they do not grow very large, and they fall early. They cannot be relied upon to give large crops. If one wants a Pear orchard to supply the market, he should plant standards, and give them plenty of room. This statement, coming as it does from one of the oldest and most careful cultivators in New England, is worthy of the thoughtful consideration of those of the Eastern States who purpose planting Pears for profit. Mr. Coit's experience is similar to that of thousands who have been induced to select dwarfs instead of standards. Charles Downing, the veteran horticulturist, whose name is known wherever fruit is grown in this country, gave years ago his ripe judgment against this dwarf fallacy, and each season's experience serves further to show how far-sighted Mr. Downing was in his prediction. It will, no doubt, take many years to convince the public that it is labour and money thrown away to plant dwarfs in the orchard, but the constantly-increasing current of testimony in that direction must tell in time."

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

American Gooseberries.—The *Horticulturist* of New York figures in its January number some varieties of American Gooseberries which seem distinct from our own, and would appear to merit a trial in this country.

Juglans nigra.—A Michigan farm of 80 acres is surrounded by a gigantic hedge of black Walnut trees (Juglans nigra). Would it not be well if useful instead of useless plants or trees were used in similar positions?

Moss on Fruit Trees.—Simpler and equally efficient in removing Moss from fruit trees as carbolic soap and lye, is a whitewash made of hot lime and water, as used by Mr. Carmichael, late of Sandringham, and others. Whenever and wherever a spot of Moss or patch of Lichen appears one dab of this simple whitewash removes them.—D. T. FISH.

Syringing Peach-trees while in Bloom.—This has been an exceptionally dull season for the "setting" of early Peach crops, but by keeping up the temperature by fire heat, and syringing the trees every second day in the afternoon with clean tepid water, we have got a perfect smother of fruit that will require much thinning.—J. S. W.

A Devonshire Custom.—A curious custom was formerly observed, on the eve of the Epiphany, by the farmers and their labourers in the south of Devonshire. The ceremony alluded to consisted in the men repairing to the orchard, where, encircling one of the most fruitful trees, they drank the following toast three times :—

Here's to thee, old Apple tree,
When thou mayst bud, and when thou mayst blow!
And when thou mayst bear Apple enow!
Hats full! caps full!
Bushel—bushel—sacks full!
And my pockets full too!
Huzza! Huzza! Huzza!

Inducing Pines to Show Fruit.—The best matured plants, especially Queens, will, as a rule, fail to show fruit if started with a high top and bottom heat at the first. 75° bottom temperature, and 70° minimum and 80° maximum tops should never be exceeded till the fruit is visible, when 5° may be added to these respectively. I have known a whole house of Pines lost through neglecting these precautions in the anxiety to hurry fruit forward.—W.

GARDEN STRUCTURES.

THE IMPROVED CURVILINEAR PEACH HOUSES.

Among the various exhibits at Birmingham last year in the way of glass structures, few had a more elegant or pleasing appearance than the curvilinear houses, shown there by Mr. Perry, of the Nurseries and Horticultural Building Works, Banbury. These houses are built of wood, and glazed with 21 oz. sheet glass, connected with strong cathedral lead, the roof at a few paces distant presenting the effect of a plain surface of glass; this, with their curved outline, makes them look extremely light, while the maximum of light is admitted, and freedom from drip and cold draught secured. In the ordinary style of building the value and preservation of the structure mainly depends on its being frequently and thoroughly painted, thus entailing considerable outlay, and often causing great inconvenience. In the improved curvilinear roof there is only a portion of the woodwork in the ventilating apparatus exposed to the weather; therefore, outside painting, with this exception, is dispensed with. These houses are not only suitable for Peaches, but are equally well adapted for Vine and fruit-growing generally.

TERRA COTTA STOVES.

My foreman having alluded to these valuable stoves in a late number of The Garden, I beg to say that I can fully endorse the truth of his statement. My experience with this kind of stove is sufficiently ample to justify my recommending it as the best and cheapest portable stove with which I am acquainted. Last year one of my boilers at Enville gave way in the Orange-house; I ordered one of these stoves to keep up the heat during the time the boiler was under repair, and it did its work so well as to far exceed my expectations. The same stove was afterwards used to heat a large schoolroom, and it gave equal satisfaction. The consumption of fuel is so small that 3d. would keep it at work from sixteen to twenty-four hours, and the attention which it requires is really nothing. It may be left for sixteen hours or more with perfect safety. No fumes of any sort escape from it, and it may be used in any plant-house without fear of injury to the most delicate plants; between the terra cotta and outside case it is packed with sand, so that in using common fuel no smoke can escape. Just as the late frost set in I had the misfortune to lose an old boiler which warmed my early Vinery at Hatfield; I therefore at once started off and bought one of these stoves, hurried home, got the stove set at work, and saved my early house of Grapes, then about the size of Peas. This little stove so astonished every one by the little attention which it required, and the great length of time during which it imparted heat with once filling the bucket, that my foreman determined to try how long it would burn without replenishing it with fresh fuel. His only attention was to keep a check upon the draught, and he has already stated in your columns that for forty-six hours it imparted heat. The price of the stove is 57s., and those with moveable tops are by far the best. This should be particularly stated when ordering these stoves.

Whilst on the subject of stoves, allow me to direct attention to one of the best of portable stoves for heating hot-water pipes that perhaps has ever been invented, viz., Deards' Patent Amateur's Heating Apparatus, to which a medal was awarded at Birmingham. Of these I have one at work, which heats a house of considerable dimensions in the most satisfactory manner. This stove can be removed from house to house if necessary. It requires no fixing, being simply placed on a stand of bricks. The joints of the pipes being made with india-rubber rings, can quickly be pulled to pieces and can as quickly be put together again. Indeed, the whole apparatus may be taken down and put up to work again in a couple of hours. To those who require a small apparatus to heat Cucumber houses, or greenhouses, &c., and one that requires but little attention, and the smallest consumption of fuel, these stoves are really invaluable. All who have a greenhouse should possess one; indeed, every gardener who has any quantity of glass would do well to have one by him, in case of need, for we never know when a boiler may collapse. The water space of these stoves consists of a continuous coil of pipe, either large or small, according to the requirements, completely surrounding the fire. From 100 to 150 feet of hot-water piping may be heated for about fourpence per day, the stove burning from eight to twelve hours without attention. Roberts' Patent Terra Cotta I consider the best and cheapest portable dry stove, and Deards' Patent Centrifugal Heating Apparatus the best and by far the cheapest stove for heating hot water that has yet ever been invented.—Edward Bennett, *Gardener to the Marquis of Salisbury, Hatfield, Herts.*

THE KITCHEN GARDEN.

THE VARIETIES OF THE GARDEN PEA.

I. FRAME PEAS.

Dillistone's Early (*Carter's First Crop; Sutton's Ringleader; Clarke's Rapid Prolific*).—The plant is of a slender habit of growth, producing a simple stem 2 feet high, bearing on an average from seven to nine pods. These are generally single, but occasionally in pairs, almost straight, and containing seven Peas in each. The ripe seed is small, smooth, and white. This is the earliest of all the white-seeded Peas, and with the exception of Mr. Laxton's Harbinger, is the earliest known. When this variety first appeared, twelve or fourteen years ago, and before it had been allowed to degenerate, it was far in advance of every other variety. Sown on the 19th of February, the plants were a mass of bloom on the 19th of May. On the 5th of June the blooms dropped and the slats appeared, and on the 22nd of June the whole crop was ready to be gathered. At that period it was quite seven to eight days earlier than a perfectly pure stock of Sangster's No. 1, which up to that time had been regarded as the earliest of all. A striking feature of Dillistone's Early is, when pure, that the plants are all of a uniform height; they bloom in a mass, the pods all appear together, and the whole crop is ready to be gathered at the same time.

Sangster's No. 1 (*Daniel O'Rourke; Carter's Earliest; Dickson's First and Best; Sutton's Champion: Sutton's Improved Early Champion; Dickson's Climax; Washington: Isherwood's Railway; Early Caractacus; Taber's Perfection; Hooper's Early Rival*).—This variety is of a slender habit of growth, more so than early Emperor, and consists of a single stem 2 feet high, producing, on an average, from eight to ten pods on each plant. Pods generally single, but frequently in pairs, 10¾ inches long, and upwards of half an inch wide, quite straight, thick and plump, and terminating abruptly at the point. When fully grown they become much swollen, broad in the back, and somewhat round or quadrangular. They contain, on an average, seven, but frequently eight Peas. The ripe seed is white. This and Waite's Daniel O'Rourke were sown in adjoining rows 5th of April, 1853, and came into bloom on the 5th of June; on the 9th the first blooms began to drop, and the slats (young pods) to appear; by the 22nd the whole plants were nearly out of bloom; and on the 1st of July the pods were quite filled and ready to gather. I was most particular in my observation of these two varieties, as it had been said by some that they are distinct. That there should be no mistake I procured Sangster's No. 1 from Mr. Sangster, and Daniel O'Rourke from Mr. Waite. They were sown on the same day, came up on the same day, slatted on the same day, podded on the same day, and died-off on the same day, after having attained the same height, and presented the same habit of growth. This is a very valuable Pea. It is not so tall by some inches as Emperor, stops growing and blooming much sooner, and is ripening off when Emperor is still fresh and growing. In this respect it is very valuable to the gardener, as it enables him, after obtaining a prolific crop of early Peas, to clear the ground for something else. It comes into use seven days later than Dillistone's Early, and matures its crop more slowly.

Early Kent. (*Early May; Prince Albert*).—The true Early Kent is now almost, if not quite, out of cultivation, and deservedly so, its place having been occupied by Dillistone's Early, a more prolific and an equally early Pea. It is of a very slender habit of growth, and rarely more than 2 feet high, producing a scanty crop of small ill-filled pods. Its only recommendation, even in its best days, was its earliness. It was this variety which was formerly grown extensively at Higham, in Kent, a very early locality, from which the first Peas of the season came into the London markets.

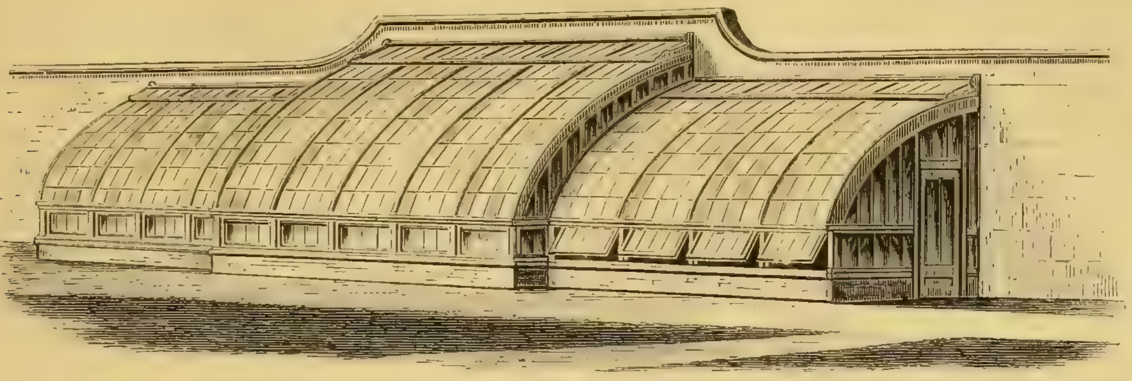
Taylor's Prolific.—The pods are all strictly single, and are of the size and shape of Sangster's No. 1, containing on an average from six to seven Peas in each. The plant is 2 feet high, and produces perfect pods even to the top of the haulm, when the whole ripen off simultaneously. Taylor's Prolific seems to be a very superior variety of the old Early Kent, from which it has, no doubt, originated

Early Emperor (*Early Sebastopol; Morning Star; Rising Sun; Warner's Conqueror; Warner's Emperor*).—Plant of a slender habit of growth, always with a single stem, which is 2½ to 3 feet high, and produces from eight to ten pods on each plant. Pods generally single, but frequently in pairs, from 2½ to 3 inches long, perfectly straight, and terminating abruptly at the end. They are well filled, and contain from five to seven Peas, which are roundish and flattened, seven-twentieths of an inch long, six-twentieths broad, and the same in thickness. The ripe seed is white. The seed was sown on the 5th of April, 1851, and the plants came into bloom on the 5th of June; the blooms began to drop on the 9th, and on the 1st of July the pods were completely filled and ready to gather.

Ruelle Michaux.—This is a very inferior stock of Early

Emperor, having short broad pods, and coming into use at the same time.

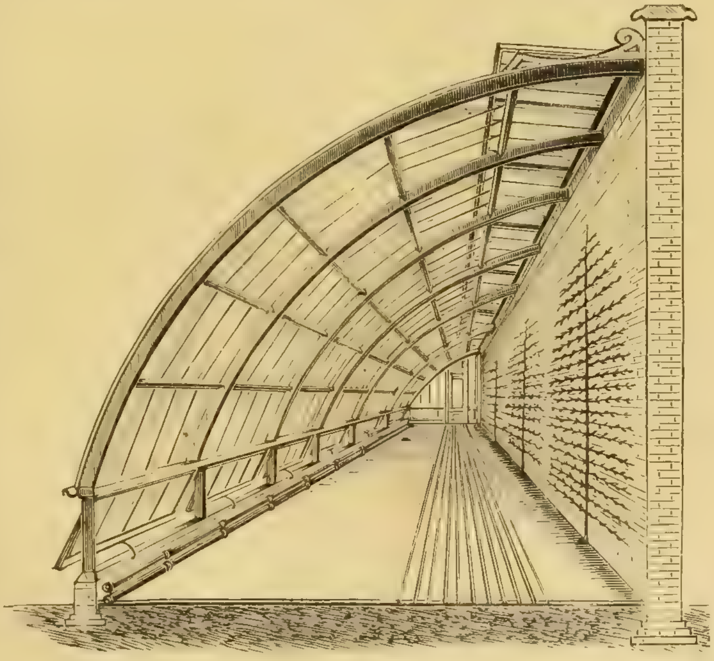
Danecroft Rival (*Girling's Pea; Glass Pea*).—This can be easily distinguished from every other variety by the total absence of glaucescence or bloom on the leaves, which gives it a singular and sickly appearance. The plant is from 2½ to 3 feet high, of slender habit of growth, and consists of a simple stem. The pods are produced singly, and are from 2½ to sometimes 3 inches in length, perfectly straight, and terminated abruptly at the end; being in every respect similar to those of Warner's Emperor. They contain, on an average, seven Peas, but occasionally eight. The ripe seed is white. This, though an early Pea, and coming in almost as soon as any of those already described, is not a desirable variety for general cultivation. It is much less productive, and considerably more tender. This was raised about thirty-five years ago by Mr. Girling, of Stowmarket.



The Improved Curvilinear Peach Houses.

Sutton's Emerald Gem (*Sutton's No. 1 Green; Sutton's First of All; Sutton's Earliest of All*).—This bears a near resemblance to and has the same habit of growth as Danecroft Rival, and, like that variety, is destitute of the glaucescence which all other Peas possess; it comes into flower two days earlier than Danecroft Rival and is fit for use at the same time, being four days later than Dillistone's Early.

Beck's Gem (*Tom Thumb; Turner's Royal Dwarf; Nain hâtif extra; De Grace*).—This is the most dwarf-growing of all the varieties. It rarely ever exceeds a foot in height; the stem is of a stout habit of growth, and branches at every joint to within three or four of the top, producing from fourteen to eighteen pods. The pods are almost always borne in pairs, rarely singly, and are produced at every joint, particularly towards the top; they are smooth, of a dark green colour, and well filled, containing from five to eight Peas, which are almost as large as Imperials. The ripe seed is greyish pearly colour. This is a very excellent Pea for forcing, and for early sowing under walls or other shelter. It is remarkably prolific, and cannot but be of great use in small gardens where sticks cannot be conveniently obtained or made use of. This ripens at the same time as Early Emperor.



Interior View.

Telegraph.—This is in every respect, as regards habit of growth and general appearance, similar to the Early Emperor, and differs from it in the ripe seed having a black hilum like the Egg Pea. It also partakes of the character of the Egg Pea in flavour, having the rough Bean-like taste which is remarkable in that variety. It produces, on an average, five to eight pods on a stem, and these contain from seven to eight Peas. Sown the same day, it ripens two days later than Early Emperor. The variety is not worth growing.

Early Ringwood (*Ringwood Marrow; Flanagan's Early; Beck's Marrow; Essex Rival*).—This produces a very large well-filled pod, and is a most abundant bearer; but it has a peculiarity, which, by some, is considered an objection, from the pod being white instead of green, and presenting, when only fully grown, the appearance of over maturity. This objection, however, is chiefly taken by those who grow it for market, and who find a difficulty in convincing their customers that, notwithstanding the pod being white, it is still not over-ripe. So far from being out of season, the Ringwood Marrow retains its tender and marrowy character longer than many other varieties. Plant with a moderately vigorous habit of growth, producing a stem which is 3½ to 4 feet high, and always simple except in wet seasons, when it makes a second growth by throwing out shoots from near the ground. The lowest pods are within about a foot of the ground, and are produced at every joint, even to the extremity, the whole number on each plant being from ten to twelve. The pods are single and in pairs, in about equal proportions, from 3 to 3½ inches long, and six-tenths of an inch wide, slightly curved and waved on the upper margin, and terminated rather abruptly at the point. As they ripen they become thick and fleshy, with a rough, pitted and shrivelled surface. They contain from six to seven large Peas, which are roundish and not compressed, about nine-tenths of an inch long, seven-tenths wide, and the same in thickness. The ripe seed is white. It comes into use six days later than Sangster's No. 1.

Early Warwick (*Racehorse; Essex Champion*).—What is now grown under the name of Early Warwick is very different from the variety to which the name was originally applied. When first obtained at Evesham, in Warwickshire, it was a single-blossomed Pea, and somewhat earlier than the double-blossomed Frame of those days, but it gradually lost its single-blossomed character, and has now become in all gardens with which we are acquainted identified with the ordinary Early Frames.

Early Frame.—In adopting the name "Early Frame," I mean to include all the forms known under that name, whether they are called single or double-blossomed, for in fact there are none that are absolutely single or absolutely "double-blossomed." These expressions are not meant to indicate any peculiar structure of the flower as regards the number of petals, but merely that the blossoms are produced singly or in pairs on the same peduncle. Great efforts have from time to time been made to preserve the single-blossomed character, and notwithstanding the care that has been bestowed upon the selection, growers have hitherto failed in rendering it permanent. There is however, no real advantage to be obtained, even if that character were secured, for the supposed earliness of the single-blossomed Frame Peas is now far exceeded by other varieties that have been introduced of late years.

Dickson's Favourite *(Dickson's Favourite Improved; the Wonder; Cotterell's Wonder; Torwoodlee.)*—This seems to be a form of the Auvergne, but the plant has a more slender growth than that variety, and it is a day or two earlier. It grows from 4 to 5 feet high, with single stem, and pale green foliage. The pods are produced in pairs to the number of twelve or fourteen, and are curved, but not so much so as in the Auvergne, and contain from six to seven Peas in each. Ripe seed white. This variety, like the Auvergne, has a strong tendency to degenerate, and to lose its distinctive character, and therefore requires to be closely selected to preserve the stock in a state of purity. It is decidedly an inferior Pea to the true Auvergne, which it resembles, and which produces long, curved, well-filled pods containing from nine to twelve Peas in each.

Leopold II.—This bears a close resemblance to Early Ringwood, the foliage and pods being of the peculiar pale green colour of that variety. The pods are long, narrow, nearly straight, very badly filled, the middle Pea in each pod being abortive. It is two days later than Early Ringwood.

Bishop's Long-podded *(Bishop's Improved.)*.—The old Bishop's Dwarf is now entirely out of cultivation. It was a low-growing plant, 9 inches to a foot high, with a branching stem, and produced small insignificant pods 2½ inches long and half an inch wide. Such a Pea is of no use in these days. Bishop's Long-podded is a great improvement on the old variety. It grows about 2 feet high, produces numerous branches, and bears from eighteen to twenty pods on a plant. The pods are either single or in pairs, and contain from seven to nine Peas in each. Ripe seed creamy-white.

Sutton's Long-podded Tom Thumb.—At the trial of Peas held in the garden at Chiswick this season, the Committee decided that this was identical with Bishop's Early Dwarf.

Carter's Farmers' Prolific.—Plant with a strong and robust habit of growth, 5 to 6 feet high, producing fourteen to sixteen pods on each stem, which are narrow, and very closely filled with six or seven small Peas. It is a very prolific variety, and comes into use about the same time as Dickson's Favourite and Auvergne.

Spanish Dwarf *(Dwarf Fan; Dwarf Bog)*.—This is an old and worthless variety. The plant is about a foot high, branching out on each side in the manner of a fan, and hence it is called the Dwarf Fan. The pods are either single or in pairs, from 2 to 2½ inches long, and about half an inch broad, terminating abruptly at the point, and containing from five to six rather large Peas. There is a variety of this which is called the Improved Spanish Dwarf, and grows fully 9 inches taller than the old variety, but it possesses no particular merit to recommend it.

Glory of Cassel is similar but inferior to Auvergne, and is about two days earlier.

Auvergne *(White Sabre; White Scimitar)*.—The Auvergne Pea was introduced from France some years ago by the Royal Horticultual Society, but although it very far surpassed every other variety of White Pea then in cultivation, it never became widely known or generally cultivated. It is a most characteristic variety, and always easily distinguishable by its long and curved pod. The plant is of a moderately strong habit of growth, producing a single stem from 4 to 5 feet high, according to the soil in which it is grown, and bears from twelve to fifteen pods on each. The pods are generally small, but sometimes in pairs; when fully grown, 4½ inches long, and over half an inch broad, tapering towards the point and very much curved; they contain from nine to twelve Peas, which are very closely compressed, and are the size of the Early Frames. Even the small pods contain as many as from seven to nine Peas in each. The ripe seed is white. It is four or five days later than Early Ringwood.

Shilling's Grotto.—The plant is of a strong habit of growth, always with a single stem 4½ to 5 feet high. The pods are generally single, but frequently in pairs, 3½ inches long and about half an inch wide, and containing on an average about seven large Peas. The ripe seed is white. It is thirty years since this Pea was introduced, and at that time it was a decided acquisition, being a great improvement on the second early varieties then in cultivation. Since the introduction of Champion of England, Champion of Paris, Prizetaker, and several others to which it is certainly inferior, and which ripen at the same time, it may very well be dispensed with. It ripens at the same time as Auvergne.

Charlton.—It is a hard matter to say what the Charlton Pea is now-a-days. The old variety, which was so long known under that and a dozen other names, having disappeared, the Charlton Pea, as a variety, exists only in name. For very many years it was the most extensively cultivated and the most highly esteemed of all the varieties then known. It was the earliest and the best, and the care bestowed on the growth and selection of the stock was as great as is now exercised on that of Emperors or Number Ones. The same propensity for the multiplication of the names of a good thing seems to have been as great in former ages as in this; and hence we find Charltons and Hotspurs with designations almost as numerous as the names of the persons who grew them. The original name of the Charlton Pea was Hotspur, still used by some, and by contraction Hots; or, rather, it may be that Hots is the original, for I have somewhere read, in an old author, the word " hot" made use of in the same sense as we do " early." I do not know at what period this variety first became known; but I can trace it as far back as the year 1670, and from that period till about 1770, or as nearly as possible for one century, it continued to stand first in the list as the earliest Pea, until it was supplanted by the Early Frame about 1770. The various names by which it was known during the last century were Reading Hotspur, Masters' or Flander's Hotspur, Golden Hotspur, Brompton Hotspur, Essex Hotspur, Omerod's Hotspur, Early Nichol's Hotspur, Charlton Hotspur, and, finally, Early Charlton. The last name became general about 1750. There can be no doubt that these names were applied much in the same way as we have described under Early Frame, and that the varieties were distinguishable according to the care with which the growers selected them. Masters' Hotspur, which is still retained in some catalogues of the present day, was so called from a person of that name, who, it is said, selected it, and who was a nurseryman at Strand-on-the-Green, near Brentford, 140 years ago. It has also been called Hastings, Marquis of Hastings, and Essex Readings. It is not in our power to furnish a description and a figure of this variety, for, as we have said, there is in reality no such thing as the Charlton Pea in existence. That which is sold for Charltons is any degenerated stock of Early Frames, or any stock of Frames which cannot be warranted or depended upon, but which are, nevertheless, of such a character as to admit of their being grown as garden varieties. Let writers on gardening, therefore, be careful in future, when called on for a list of Peas, not to give, as is often done, the Charlton as " the best second early." There is no distinct variety grown for Charltons by the seed-growers.

Dwarf Waterloo Branching.—This closely resembles Bishop's Long-podded, but is two days earlier. In other respects there is really no difference.

Nabob (Laxton).—This was raised by Mr. Laxton from a cross made between Little Gem and Laxton's Prolific Long-pod. The plant is 18 inches to 2 feet high, strong and robust in habit, with large dark green foliage. It produces from ten to twelve pods, which are long and curved, of a deep green colour, and containing from seven to nine medium-sized pale green Peas. This is the largest and most handsome of the dwarf early white Peas, and it is exceedingly productive.

Royal Dwarf *(White Prussian; Poor Man's Profit; Dwarf Prolific)*.—Plant of medium growth, with an erect stem, which is 3 feet high, generally simple, but occasionally branching. The pods are sometimes single and sometimes in pairs, but generally single, and from 2½ to 3 inches long, half an inch broad, almost straight, and somewhat tapering to the point; the surface is quite smooth, and the colour bright green. They are generally well filled, and contain from five to six Peas, which are somewhat ovate, not compressed, eight-twentieths of inch long, seven-twentieths broad, and the same in thickness. The ripe seed is white. The seed was sown on the 5th of April, and the plants bloomed on the 26th of June. The blooms dropped and the slats appeared, and on the 16th of July the pods were fit to be gathered. This is an old and very prolific variety, well adapted for field culture, and long a favourite in gardens, but now superseded.

Clamart.—The plant is very vigorous, and in its habit much resembles Early Emperor. It grows late, and maintains its fine green foliage to the last. Pods generally in pairs, produced in succession, from sixteen to eighteen on each stem, and containing from six to eight Peas each. It is a week later than Early Emperor.

Peabody.—This is of a dwarf, bushy, and compact habit, and the leaves are rather small, numerous, and of a bright green colour. The stem is 2½ feet high and branching. Pods rather narrow, small, and extremely well filled, deep green, and containing from six to seven rather small Peas. This is a very productive variety, and stands the dry weather well, but is of inferior quality. It is eight days later than Auvergne, and five days later than Royal Dwarf.

Victoria Branching *(Paul's Early Dwarf; Paul's Prolific)*.—Plant with a strong robust habit of growth, 3 feet high. The stem is generally simple, but sometimes branching, and bears from twelve to sixteen pods, which are 3 to 3½ inches long and half an inch broad, and contain from seven to eight large Peas. The foliage is dark green. Ripe seed white. This is a very abundant bearer; it is three days later than Royal Dwarf.

Crown (*Bunch; Cluster; Mummy*).—This is a very characteristic variety, known at once by producing its pods at the extremity of the stem in a bunch or tassel. The plant is 4½ to 5 feet high; the stem gradually increasing in thickness from the root upwards, in some instances to the thickness of a man's thumb, when it becomes quite dilated, producing twenty-four to thirty pods in a bunch. These are small, round, and well filled, in appearance like those of Early Emperor, and containing from four to seven small Peas. Ripe seed small, round, and white. This curious but useless Pea, sown on the 23rd February, first bloomed on the 16th of June, and was in full bloom on the 17th. The slats appeared on the 21st of June, and the crop was ready for use on the 1st of July.

(*To be continued.*)

ONIONS.

One of the best cultivators of Onions I ever met with invariably grows them on the piece of ground which previously contained Celery. As the Celery is cleared away, the ground is trenched to the depth of 2 feet or thereabouts, according to the depth and fertility of the soil; and, his ground being a little stiff, he adopts the practice of throwing the rotten dung from the bottom of the trenches to the top. In dry, frosty weather, when the ground is frozen to the depth of 4 or 5 inches, the frozen lumps are beaten to pieces with a mattock, and the surface of the ground left rough. About the last week in February or the first week in March, according as the weather proves dry and favourable, the ground is slightly forked over and the surface left as level as possible. In the course of a week pigeons' dung is thinly spread over the surface; and, should the ground be damp, in addition to the pigeons' dung, some charcoal dust is added, in order to make the ground work as freely as possible. The charcoal is also considered a fine manure for the Onion. Then the manure is forked in and the ground raked as level as possible. The seed is sown in drills one foot apart, and they are not divided into beds, as it is thought to be a waste of ground if provision be made for paths. As soon as the plants are well through the ground, the hoe is used between the rows, and any weeds that may have put in appearance among the plants are removed by hand. As soon as it can be done, thinning out is proceeded with, and the plants are left from 4 to 5 inches apart in the rows; and subsequently hoeing and hand-weeding are continued as often as requisite. Grown in this way, fine symmetrical bulbs are formed, with but a very slight admixture of a coarse thick-necked type, for seed is saved only from the best-developed bulbs. When the crop is fully ripe, it is pulled up, and after lying on the ground for a few days they are brought into a shed to finish drying. In a wet season they are put into a frame or vinery to dry, or into a Mushroom house where a little fire is kept on, in order to get them thoroughly dry, as the keeping of them entirely depends on this. A few are always selected for exhibition purposes. In dry weather these are helped with a little weak liquid manure, and as the neck begins to swell they are pinched by the pressure of the finger and thumb, so as to throw the strength of the plant into the formation of the bulb, and to secure that desired fineness of neck so requisite on the exhibition table. In this way it is not unusual to have twelve tubers weighing collectively from 12lb. to 15lb. R. D.

Wintering Cabbages.—Persons interested in the preservation of Brassicaceous crops from great cold may find the following account of how that can be effected suggestive. Cultivators near Philadelphia preserve from one to twenty acres of Cabbages thus:—Commencing on one side of a field—if but few heads have been already cut out—the third row is all pulled by the roots, and laid in the adjoining rows; then, with a two-horse plough, run a furrow where the Cabbages stood, returning in the same. If it is desired to keep Cabbages until spring, it should be about 6 inches deep. Then, while men on each side pull the Cabbages from the two adjoining rows and place them and those before pulled—with the roots up—close to this furrow, a man stands astride it, and takes them by the stalks and sets them in the furrow (by drawing them up it a short distance, from front to rear, the leaves will be drawn under the head). When these rows have been thus gone over, the next five—more or less, according to the capacity of the furrows to hold them—are similarly handled. When a number of such furrows have been filled, one strong horse is hitched to the plough and a furrow thrown up on each side of the Cabbages thus set; a ridge is thus made over the heads that will throw off the rain.

Sowing Cucumber Seeds.—One hint alone which I got from Mr. David Thomson's "Fruit Culture under Glass," repaid me for the cost of the book. Mr. Thomson soaks his Cucumber seeds in water for twelve hours before sowing them. As many persons know, I make a speciality of growing Long Gun Cucumber seed, and it, like many high-bred Cucumbers, often produces very light seeds. I know this might be remedied by crossing with another sort, but then the produce would be no more "Long Gun." So careful have I been for many years to prevent crossing, that I have not allowed any other kind to flower in my garden whilst growing seeds of this variety. In sowing early in the season I have often been vexed to find a good proportion of the seeds come up very weakly, or refuse to grow. Immediately on reading the above-mentioned paragraph, I soaked some rather light seed all night, and had it sown the next morning, and nearly every seed came up at once, almost as quickly as Mustard and Cress would have done. Talking over the matter with a good gardener this morning, he said that he had practised the plan of soaking his seeds for some time, and had proved that a seed so light even as to float on the water would, after soaking for a time, sink, and when sown would grow and produce a healthy plant. Probably this may be known to many, but it was new to me.—J. R. Pearson, *Chilwell.*

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Manuring.—In my paragraph on this subject in last week's Garden (p. 148), instead of 9 square feet, read 9 feet square, which really means 81 square feet. Thus to every 81 square feet of land, my neighbour applied a barrowful of manure, whereas I applied the same quantity to little over 16 square feet.—A Surrey Market Gardener.

To Protect Peas from Mice and Birds.—M. Glöde, in the *Revue Horticole*, recommends the following as a most effectual protection for newly-sown Peas: "Twenty-four hours before sowing I steep my Peas in water. I then powder them over with red-lead, rolling them about in it so that it may adhere to and cover the entire surface. After this I plant them in the ordinary way, and for ten years, during which I have followed this plan, my Peas have never been attacked by mice. Birds will occasionally scratch up a few, but they never eat them, and any that happen to be thus plucked up are left on the ground untouched."

Snow's Winter White Broccoli—Like many others I have seldom been able to obtain this valuable Broccoli true to name, I therefore now grow in its stead, Sutton's Superb Early White, with the following results: The first sowing, made on March the 1st, came into use on December the 15th; the second sowing, made on April the 3rd, came in on January the 14th; and the third sowing, made on April 29th, is now (February 20th) coming into use, white and solid, the heads being about as large as an ordinary breakfast cup, a size which I have always found to be most esteemed by good cooks. I wish it to be understood, however, that this Broccoli does not resemble the true Snow's Broccoli in growth. Neighbours of mine who are growing sorts named Snow's have not yet cut one head, nor have they any signs of any.—Thomas Davies, *Fox Hill, Reading.*

THE LIBRARY.

HESIOD AND THEOGNIS.*

This well-written little book is one of the series of "Ancient Classics for English Readers," which are now being published by Messrs. Blackwood in handy and neatly got-up quarterly volumes at 2s. 6d. each. It contains a masterly summary of the lives and writings of these two ancient poets, of the former of whom (the possible contemporary of Homer, and the earliest writer on agricultural subjects) the author well observes in his preface that "nine out of twelve students finish their classical course with but the vaguest acquaintance with his remains. Such, therefore, ought to be as thankful as the unlearned for an idea of what he actually or probably wrote." Commencing with a succinct but graphic account of the life of Hesiod, which "has been compiled from ancient and modern biographies, with a constant eye to the internal evidence of his extant poetry," Mr. Davies presents us, in the four succeeding chapters, with a comprehensive analysis of "The Works and Days," "The Proverbial Philosophy," "The Theogony," and "The Shield of Hercules," abundantly illustrated by quotations from these works, as rendered in the excellent English versions of Elton and Chapman, and the equally spirited occasional translations of the editor himself. The sixth chapter closes the first part of the book with an interesting notice of "The Imitators of Hesiod," in ancient and modern times. The remainder of the volume is devoted to three chapters on Theognis, an account of whose life and works will be an acceptable novelty to non-classical readers, few of whom, we believe, know this poet even by name. We regret that want of space prevents us from giving a few extracts; but we most heartily recommend Mr. Davies's work to all who can appreciate the results of ripe and able scholarship expressed in the language of a finished style, a correct judgment, and a refined taste.

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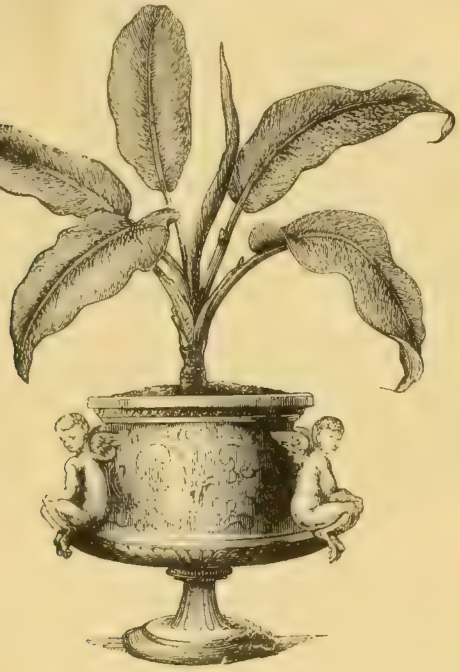
* "Hesiod and Theognis." By the Rev. James Davies, M.A., late Scholar of Lincoln College, Oxford, Translator of "Babrius." William Blackwood and Sons, Edinburgh and London, 1873.

THE GARDEN IN THE HOUSE.

DIEFFENBACHIA PICTA.

All the Dieffenbachias are extremely handsome plants when young and well grown, but as they get old their stems become long and naked. The ease with which they may be propagated, however, renders this defect the less to be regretted; for, immediately they get "leggy," they should be decapitated, removing along with the crown an inch of bare stem. Insert this in a brisk bottom heat in a close, moist, and well-shaded frame within the stove, or under a hand-light in the same situation, and a new stocky plant, well furnished with foliage to the root, will be the result. Nor does this decapitation finish the task of the stem, for if it be kept in the pot it will soon emit shoots, those at the top being the most prominent, all of which can be taken off and treated as cuttings. By cutting the stem into as many pieces as there are joints, and laying them in sand kept moderately moist and in a stove temperature, they soon form plants. As window plants in summer, Dieffenbachias are very useful, their beautifully-variegated leaves, together with their tropical appearance, rendering them great favourites. For house decoration it is not, however, advisable to have them in large pots, six-inch ones being sufficient, especially in cases in which they are placed within vases. When associated with Ferns, Alocasia metallica, and a few other plants, within a Wardian case furnished with suitable means of ventilation and good drainage, and situated in a warm room in a shady window, they form beautiful and lasting objects. A compost of equal parts turfy loam and fibrous peat, together with some well-decomposed manure and a little sand, suits this Dieffenbachia perfectly, but a little extra loam should be mixed with the soil for potting such plants of it as are destined for house decoration. F.



Dieffenbachia picta.

Plant Contrivances for Rooms.—A pretty and artistic arrangement for a winter greenery is to obtain from the roadside one of those peculiar excrescences which are found growing upon the stumps of decayed trees, resembling brown rosettes of several shades, and very curiously striped. One of these, placed in the centre of a large shallow dish with earth around it, will be quite ornamental when covered with such things as Ivy, Lycopodium, Tradescantia, and the lovely blue Lobelia. Especially will it flourish if a shade is placed over the whole. Common Ivy may be quickly rooted and made to grow vigorously if planted in a box or dish of earth with a glass over it, looking green and refreshing all winter, and in the spring it can be transplanted into the garden outside, where it will cling to the brick wall of your house, and climb much faster in consequence of this early start under glass. Or the long sprays of Ivy may be gathered, and the ends put into water in bottles or deep vases, and will there strike root as vigorously as if in soil.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—Evergreens must be cleared of snow, of which we have again had a heavy fall; if allowed to rest on the branches, it is apt to break them. As soon as the snow has disappeared, finish all operations in the way of ground-work that may be in hand. Sweep and roll lawns and walks, repairing the margins of the latter where necessary. Judiciously prune evergreen shrubs, such as Aucubas, Hollies, Bays, Box, Yews, Portugal and common Laurels, Junipers, Thujas, Cypresses, Ivies, &c., which may be outgrowing the spaces allotted to them, keeping symmetry and gracefulness of form as much as possible in view. The knife is better than shears for such an operation, the latter being apt to mutilate the leaves. Roses should now be pruned, the plants having in many cases already made shoots nearly an inch in length. As soon as the snow has left us, herbaceous plants should be trimmed, and the crowns should be lifted, divided, and replanted in deeply-worked, well-manured soil; some of the more tender kinds may, however, be left a little longer before being disturbed. Lilies of various sorts and other bulbous plants, as a rule, thrive best and flower most satisfactorily when left for some years undisturbed. The stock of bedding plants may be increased as expeditiously as possible from cuttings, roots, and seeds.

Conservatories.—These are now quite gay with early blooming bulbous and other plants. Pots containing three or four Tulips, bordered with Club-moss, and set off in the centre with such Ferns as Pteris serrulata, have a beautiful effect, and the same arrangement may with advantage be carried out in the case of Hyacinths. Forced shrubs are now particularly attractive, and should be mixed harmoniously with such plants as are not in flower; amongst them are Lilacs white and purple, Weigelas, Roses, Prunuses, Thorns white and scarlet, Spiræas, Deutzias, Acacias, &c. Cinerarias, Cyclamens, Zonal Pelargoniums, Chinese Primulas, Epacrises, Heaths, and Fuchsias, are also now in great beauty. Plants in general are making fresh growth and consequently require more water. Prune and tie all that require such attention. Any that are in a backward condition in borders should be moved and have others put in their places. In planting from pots loosen the ball of soil and spread out the roots, for although this may occasion a little check for a time, the plants thrive better afterwards. All hard-wooded plants requiring repotting should be attended to at once, and afterwards kept for a time in the closest part of the conservatory. They should not be watered for some days after being potted, but the atmosphere should if possible be somewhat damp. Climbers of various sorts should be thinned and tied, taking care in thinning to provide for a free display of flowers rather than a gross production of wood.

Stoves.—Gradually increase atmospheric humidity and temperature in these structures, though very sparingly, and apply water rather more liberally to the roots of the plants. Almost all stove plants will now require repotting or top-dressing, and insects, if any, must be destroyed; for should they be spared till next month they will reward such kindness by committing unlimited mischief. Plants of all kinds should, therefore, be thoroughly cleaned before they are repotted. In the evening place over some boiler "at work," or introduce into some warm house or pit, some soil, mixed and ready for potting purposes, for no stove plant should be shifted into cold soil. Shift Palms, using for the purpose a compost consisting of fibrous peat two parts, turfy loam one part, and some sand and finely broken crocks, an open compost and plenty of water being requisite for such plants. Shake out plants of Impatiens and repot them in a mixture of loam, leaf-mould, well-decomposed manure, and some silver sand. Give Gardenias a compost of loam and peat in equal proportions, mixed with sand; the same compost, with a little more loam mixed with it, will also suit Browneas. Dalechampias should have leaf, loam, and peat, in about equal proportions; Stephanotis fibrous loam, peat, and some well-decayed manure; Sanchezias and Rondeletias peat, loam, a little leaf-mould, and sand; and Lagerstrœmias peat and loam. Indeed most hard-wooded plants grow freely in good peat and loam, with some silver sand added, and but few of them will object to the addition of a little leaf-mould. Gross-growing and soft-wooded plants, however, such as Musas, Crinums, Eranthemums, Torenias, Puyas, Pentas carnea, Gesneras, Lasiandras, Coccocypselums, Curcumas, &c., are very fond of some thoroughly decayed manure mixed in the soil in which they are potted; leaf-mould, Mushroom dung, spent hot-bed manure, &c., may be so used.

Indoor Fruit and Forcing Department.—Increase the day and night temperature of Pine-pits, in accordance with the weather, and give a little extra moisture to the roots, especially those of plants swelling fruit, but such as have nearly finished swelling should be kept moderately dry. Shift into fruiting pots all plants requiring that attention, and take off and pot suckers as they become ready. Do not starve young growing plants, for if once checked they are almost sure to produce small and premature fruit. Syringe with tepid water the surface of the beds and about the necks of growing plants, especially on fine days. As regards Vines, thin and stop the shoots, thin the berries, and keep up a steady, moist temperature. Thin young Peaches where too thick, but do not make the final thinning until after the stoning period is over, and until that time maintain a steady and moderately low temperature. Regulate and thin the young shoots, and syringe morning and afternoon with tepid water on fine days, and once every day, regardless of the weather. If a little top air can be left on at night, and artificial heat given to maintain the requisite temperature, it will be of material importance to the crop. For Cherries a temperature of 50° or 55° will be sufficient until the fruit has stoned; afterwards the heat may be increased 10° by sunheat, and when the fruit is colouring a night temperature of 60° and a day one of 75° or 80°, with sunheat, will not be too much for them. An airy house and a position near the glass is of the utmost importance in Cherry forcing, and a high temperature either by night or day before the fruit has stoned is ruinous. Give manure-water occasionally to Fig trees swelling their fruit, and syringe them freely until they begin to ripen. Pot Figs are commonly used for the earliest crop, and where houses are not specially devoted to their culture they may be successfully ripened in the Pine-stove or early vinery. Stop the young shoots at the third or fourth joint, and remove all root suckers unless a few are wanted next winter for fresh plants. The earliest Strawberries will now be ripe or ripening, therefore they are best kept moderately dry and airy. Introduce plants of them for succession into Peach-houses or vinery shelves, or into houses built purposely for them. For Cucumbers keep up a bottom heat of 75°, and an atmospheric one a few degrees lower; but in the event of bright weather, an extra 5° would be rather beneficial to them than otherwise. If the heat from fermenting material be waning, apply fresh linings or mix fresh dung with the old fermenting material. Sow a good successional crop of Cucumbers and Melons. Kidney Beans should be sown in succession fortnightly, or according to the demand: a Cucumber-house, Pine-stove, or early vinery suits this crop perfectly, and the plants must be freely syringed, to keep down red spider. Sow a few Tomatoes at once in a moderate hot-bed. Dust some sulphur over the foliage of Potatoes grown in frames, to keep down fungi. Apply water between the drills, but keep the necks of the plants dry. Rhubarb will soon be obtained abundantly from the open air, *i.e.*, if a forkful or two of litter be placed over the crowns; but a few roots for succession may still be taken into the Mushroom-house. Keep up a succession of forced Asparagus, either by placing roots in moderately-heated frames or by filling trenches between the beds with fermenting material. Start a few more Seakale roots. A temperature of 60° and a humid atmosphere should be maintained in the Mushroom-house. Protect Lettuces in frames from snow and wet, and plant some out as convenience and weather may permit; sow some seeds in a frame for succession. Sow a few Capsicums in boxes, and pot them off singly, or prick them off when they are fit to handle. Sow some Celery seeds in a gentle heat. Sow some New Zealand Spinach in a brisk temperature, for summer and early autumn use. Thin Carrots in frames; keep them dry and shelter them from snow or rain; but expose them freely in favourable weather. Sow some Turnips, Radishes, and Onions in very gently heated frames, to precede those sown out of doors.

NURSERIES.

Indoor Department.—The repotting and starting into growth of young plants will now occupy attention. In the case of Marantas, Ferns, and many other plants of which stock is scarce, the crowns may be divided, potted singly, and subjected to a brisk, moist temperature. Propagation of all kinds of plants must now be pursued with activity. Continue to sow Palm seeds as directed last week. Musa seeds treated in this way soon vegetate, and require careful attention and frequent potting; over-potting, however, must be avoided. Yuccas may be raised from seed, and the young plants should be pricked off soon after they have germinated. Cuttings and suckers of Yuccas ought also now to be used for purposes of propagation, and the long stems, if treated like those of Dracænas or Dieffenbachias, may also be employed for the same purpose. Sow seeds of Acacia lophantha, Sensitive plants, Wigandias, Ricinuses, Solanums, Mesembryanthemums, Echeverias, and other plants required for outdoor summer decoration. Sown in heat now, and potted onwards as they require it, they form nice plants by the middle of May. Propagate, by means of cuttings, nearly all kinds of stove and greenhouse plants. New Zealand plants, as a rule, root best when short young shoots are selected for the purpose. Proceed with the grafting of Azaleas, Camellias, Rhododendrons, Roses, greenhouse hard-wooded plants, Clematises, Cacti, and Conifers. If bulbs of any particular plant are scarce, make two cross cuts on the base of the bulb and hang it up in a moist pit or house, with a string, so that the base shall be uppermost; young bulbils will soon appear on the edges of the incisions. Cacti may be scored on the top for a similar purpose, but in their case no necessity exists for anything but ordinary treatment. Increase the stock of bedding plants by means of seeds, cuttings of branches, stems or roots, layers and suckers. Start Dahlias into growth, and take off the young shoots when a little over an inch in length; treat them like cuttings, and afterwards pot them singly in 60-sized pots. Cannas should be divided into as many pieces as there are crowns, and each potted singly. Good-rooted plants should be removed to frames kept rather close and moderately heated, if practicable, so as to make room for younger stock.

Outdoor Department.—Plants to be kept another year or more should now be transplanted in lines sufficiently far apart to give space enough for a good year's growth. Young Oaks, Chestnuts, Beeches, Elms, Limes, &c., that have produced branches near their base, should have such pruned off, so as to encourage thrifty growth. Deciduous trees should now be layered. Those layered last year being now transplanted, room will be found for fresh layers, which, like their predecessors, will be ready for transplantation next October or November. Bend down the shoots, fix them in the ground with pegs, and cut off their tops six inches or so above the ground. Get all stocks for next year's grafting or budding on transplanted permanently at once in ground well manured and trenched, in lines two feet apart. Cut over stocks for grafting this spring about a foot above the ground, and burn all rubbish and prunings lying about the nurseries.

MARKET GARDENS.

With draw-hoes stir the soil amongst growing crops, more especially Cabbages. Ground that has just been cleared of Celery should be levelled, manured, deeply dug, and smoothed down with a wooden rake or short-tined harrow, and marked off in lines about 20 inches or 2 feet apart. These lines should be marked both lengthwise and crosswise, and Cauliflowers should be planted in the angles. Between the rows of Cauliflowers plant a line of Lettuces, and also a plant of the latter between every one of the former. If the field be large, the most convenient plan of operation is to have some men carting manure, one or two spreading it, others digging, two lining it off, the remainder planting, and a few workwomen pulling plants and carrying them to the planters. To Cauliflowers thus planted in an open field, some earth should be drawn with a hoe in such a way as to protect their necks a little from cold. Where the soil has been trenched in 2-feet wide ridges, having a south or south-west aspect, the front of these ridges, if not already perpendicular, may be made so by a touch of the dibber or tramp of the foot, or, if necessary, with a spade; and Cauliflower plants should be inserted 2 feet apart at the base of the ridges, a situation in which they will find good protection until they begin to grow. On fine days, such as we had last Saturday, handlights should be wholly removed from the early planted-out Cauliflowers, but replaced at night; on less favourable days, but not frosty, they may be tilted up by means of a flower-pot or half brick. All plants buttoning or likely to be otherwise useless should be removed at once. Those in frames may be planted out, taking the most advanced plants first. The strongest Lettuces, and especially those amongst Carrots, should be selected first for transplanting, and great care should be taken to preserve them from damp, snow, or rain whilst in the frames. If not already done, some more Cos Lettuces should be sown in frames, the sashes from which should be entirely removed during the day, after they germinate, unless it is wet, and then they should be tilted up. Throw out some pits 18 inches deep and 6 feet wide, with 2 or 3 feet spaces between them, and fill them with fermenting manure. Over the manure put 9 inches of soil, level the surface and smooth it with the back of a spade or roller, and sow thereon some white Dutch Turnips. Over the seed sift some soil from the spaces between the beds and then cover with litter in the way in which Radishes are covered. By this means an early crop is soon secured. Celery seed should be sown at once in a similar way, for, raised under such circumstances, the plants are hardier and not so liable to "bolt" as when treated more tenderly. Some more Radishes should be sown on the last lifted Rhubarb plantation, and covered with litter. Rhubarb is now growing fast, some in sheltered places having formed leafstalks 6 inches long; the sooner, therefore, the crowns are covered the better—not with the view of forcing them, but merely for the purpose of protecting them a little from cold, and of inducing the stalks to come tender, crisp, and clean; the market returns, indeed, soon indicate the importance of thus covering the crowns. When plantations of Rhubarb are extensive, it is impossible to cover all the crowns in this way at one time, especially where there are other uses to which the litter should be put, such as covering Radish beds, Mushroom ridges, &c.; but all that can be spared should be thus applied.

NOTES OF THE WEEK.

—— The Council of the Royal Botanic Society have agreed upon estimates for building a new and extensive range of houses for preserving the rapidly increasing collection of economic plants possessed by the society.

—— Continental journals announce that it is intended to hold a great Horticultural Exhibition at Florence in 1874, of which Professor Parlatore will be the director or president. In connection with this event, a Congress of Botanists is also spoken of as likely to meet there.

—— There is at present in flower in the hothouse of the Muséum at Paris, a very fine specimen of Bambusa arundinacea, the great Indian Bamboo. This, we believe, is the first instance on record of the flowering of this species in Europe.

—— A single plant of the handsome-leaved climber, Cissus discolor, now growing in the gardens of M. Linden, at Gand, during the past year produced new shoots, the total aggregate of the length of which amounted to upwards of 1,625 feet! M. E. André informs us that the plant was grown in a mixture of coal-ashes and spent tan.

—— The Council of the Royal Society are about to nominate Dr. Hooker, director of the Royal Gardens, Kew, as president of the society, in succession to Sir George Airy, who, as will be remembered, has announced his intention of retiring from the chair at the society's anniversary in November next.

—— The value of Potatoes imported last month was £282,303, and £15,987 in January last year; while in the same month of 1871 the declared value was only £222.

—— In a Lemon plantation at Palermo last year there was a serious deficiency in the crop, in consequence of many of the trees having produced double flowers.

—— It would appear that in America fruit nomenclature is occasionally at fault, if we may judge from the following from the *Albany Cultivator*:—"Please inform me," says a correspondent of that paper, "where to get the Baker Apple tree, so as not to be humbugged."

—— About fifteen years ago, M. E. Carrière, the able pomologist of the Jardin des Plantes at Paris, made an experiment in grafting two varieties of Pear (the Beurré de Malines and the Fondante des Bois) on the Doucin Apple stock. We now learn that the Pears thus grafted have not only grown well but have also borne crops of excellent fruit.

—— The Rev. H. N. Ellacombe, Bitton Vicarage, Gloucestershire, writes to us as follows concerning the pretty little Iris stylosa and Anemone blanda:—"Of all hardy spring flowers I think there is none to surpass Iris stylosa, now in flower in my garden; yet it is very seldom grown. It is perfectly hardy, increases rapidly, and the flowers are much more lasting than those of most of the family. Another beautiful spring flower very little grown is Anemone blanda. It is closely allied to A. apennina; but the colour is much darker, and it comes into flower some weeks earlier."

—— At a private meeting of the members of the Fruit, Floral, and Scientific Committees belonging to the Royal Horticultural Society, held at the Charing Cross Hotel last Monday, Dr. Masters in the chair, it was resolved to form a Horticultural Defence Committee, consisting of three representatives from each committee, as follows:—Dr. Hogg, Mr. H. J. Veitch, and Mr. G. F. Wilson, F.R.S. (Fruit Committee); Mr. J. Fraser, Mr. B. S. Williams, and Mr. T. Baines (Floral Committee); Mr. R. Fortune, Mr. T. Moore. and Dr. Masters (Scientific Committee); hon. sec., Mr. H. J. Veitch. This committee is not pledged to any particular course, but will watch the course of events, and take such steps as may be desirable, having power to summon a general meeting when occasion demands.

—— At a sale of Orchids, Tree Ferns, Camellias, and Lilies which took place at Stevens's on the 20th ult., the following prices, amongst others, were realised:—Good plants of Odontoglossum vexillarium fetched £9 9s., £6 10s., £5 5s., £4 10s., and £3 12s. 6d. respectively; a good specimen in flower of O. Andersonianum £6 15s.; flowering plants of O. Alexandræ £5 15s. and £2 10s.; a flowering plant of O. gloriosum £2; and a good one of Lycaste Skinneri, also in flower, £2 8s. Plants of Dicksonia antarctica, with stems varying from 6 to 7 feet in height, fetched from £4 10s. to £6 10s. respectively; Cyathea dealbata, with trunks from 2 feet 6 inches to 7 feet 6 inches in height, realised from £2 5s. to £3 10s. A specimen of Camellia Teutonia alba, 6 feet high and 5 feet through, fetched £10 10s.; another of C. Wilderi, 4 feet by 3 feet, £6; one of C. Lavinia Maggi rosea, 4 feet by 3 feet, £3 3s.; and others from three guineas downwards. Lots consisting of fifty bulbs of Lilium auratum varied in price from £2 2s. to £2 10s. Altogether the proceeds of the day's sale amounted to nearly £400.

—— Potatoes, it is said, are now offered in France at 60 francs (£2 10s.) per ton, being less than half the price paid in London.

—— The Manchester International Horticultural Show promises to be the great event of the year. The Queen, we hear, has become a patron, and has subscribed £25 towards the undertaking.

—— The well-known seed and herb business, conducted for the greater part of a century in Covent Garden by Messrs. Butler and M'Culloch, will, we understand, in future be carried on by Messrs. Sidney G. Hart, Frederick M'Culloch, and Archibald Macdonald.

—— For the last three years there has been a great increase in the Orange and Lemon trade. The value as declared imported in 1870 was £648,056; in 1871, £1,050,115; and last year as much as £1,154,417.

—— Dr. Brewer, we understand, is engaged in the preparation of a Flora of California, which is in such a state of forwardness as to be probably ready for the press by the end of the year. Professor Gray and Mr. Watson are, it is stated, rendering assistance in the matter, so as to bring the work to an early completion.

—— M. E. Benary, a horticulturist at Erfurt, announces a new Pansy, which has large flowers of a splendid ultra-marine blue, with a well formed eye of very deep violet-purple. They are also of good substance, have strong stalks, and stand well above the leaves. M. Benary has named it "Viola tricolor, var. maxima Emperor William," and states that the variety reproduces itself with certainty from seed.

—— "We claim the honour," says the *Mobile Register*, "of having started a new interest in Japan Peas, and we are proud of it, for the Japan Pea is undoubtedly one of the best things for our climate. It is easily raised, will grow on almost any soil, and yields enormously. As food for man we think it has no equal in the Pea or Bean way." What is this Japan Pea?

—— A New Jersey Cranberry grower, with other parties, has purchased 3,000 acres marsh land in Wisconsin, for the purpose of growing the Cranberry. Wisconsin is becoming famous for her Hop yards and Cranberry fields. But a few years since these marsh lands, now so eagerly sought, were regarded of little or no value or consequence beyond "what they might have possessed to help to hold the world together."

—— The Belgian peasantry employ the following singular method of keeping red Cabbages through the winter:—Towards the end of autumn they select the best headed plants, pull them up, strip off the loose outer leaves, and then lay them in trenches, with the heads of the plants downwards, the soil being well pressed in around each head. An outer trench, a foot deep, is dug around the bed for the purpose of drainage. Cabbages thus treated are said to keep much longer and better than they do if allowed to grow on in the usual way, and especially so if they are stored in this manner in ground with a northern aspect.

—— The *Delaware Tribune* states that the total amount of the last Peach crop in that State was as follows:—Shipped by rail to Northern cities, 1,970,400 baskets; by water to Philadelphia, 759,568; by water to Baltimore, 677,206; consumed by canners and at Wilmington, 83,282—total, 3,491,050 baskets. In addition, it estimates the number eaten on peach farms, distilled into brandy, and shipped to peninsular towns other than Wilmington, as sufficient to make the grand total of 3,600,000 baskets. The average value it puts at 40 cents per basket, so that the crop on this estimate was worth 1,440,000 dollars (or £300,000) to the Peninsula.

—— The twin peaks, known as Torrey's and Gray's peaks, the highest of the Rocky Mountains, as far as known (rising considerably over 14,000 feet), were last summer visited by their discoverer, Dr. C. C. Parry (who first ascended and named them in 1862), and by the botanists whose names he attached to them. The occasion was made one of considerable ceremony on the part of the citizens of Georgetown, who were well aware of the scientific reputation of these gentlemen.

—— A Flora of Perthshire is in preparation, and will be published as soon as the list of subscribers is complete. The contents will include a general introduction—the range of each plant throughout the county (illustrated by a map showing the natural divisions of Perthshire)—the vertical range of plants ascending above 1,000 feet—the distribution in relation to the geological formations—a full list of localities for the rarer or more local species—the economic uses that native plants are still employed for in Perthshire, &c. Volume I. will include the flowering plants (both native and naturalised) and Ferns. Botanists who can assist with information are requested to kindly communicate at once with Dr. Buchanan White, Eastferry, Dunkeld.

THE ROYAL HORTICULTURAL SOCIETY.

The beginning of the end has set in, and what that end must be it is not difficult to foretell. The life of the Royal Horticultural Society has been a most chequered, if not an erratic one, and, with all its misfortunes and mismanagement, there is no denying the fact that within the last half century it has done an immense amount of good; not so much directly, as indirectly through precept, and the example set by its great exhibitions. Forty years ago, and even more recently, its garden at Chiswick was carried on in something like a representative manner; that is, the ground was systematically cropped, and the forcing houses contained fruits of all kinds grown in a fair if not first-rate manner. But gradually the demon of innovation crept it, flowering plants became the rage, the finest collection of Vines in the world was dispersed, and indoor fruits became a secondary consideration. In saying this much let us not be misunderstood, for the truth is, if the Horticultural Society claims the gratitude of the world for anything it is for the very important service it has done in the introduction, selection, and classification of the hardy fruits of all countries. In connection with that service the name of the late Mr. Robert Thompson should never be forgotten, for most unassumingly he produced, in the form of the Royal Horticultural Society's catalogue of fruits, a work which is still of the greatest value to gardeners. Those who can go back to the Sabine "break up" will recollect nothing like that event, except the occurrences of these last three weeks. Then the blame was thrown upon one back, but in justice to a much maligned man it may be still asked would the society have attained the position it did if the extravagances with which Mr. Sabine was charged had not occurred? True, he brought the society into pecuniary difficulties, but he was not a defaulter; what he expended was disbursed for the good of the corporation, and has been repaid forty-fold. It is worthy of remark, too, that the difficulties of those days and the present crisis originate in precisely opposite causes. The removal of the garden from Kensington to Chiswick, "because of the smoke," when Knightsbridge, Kensington, Chelsea, and Brompton were villages surrounded by thousands of acres of open fields, was the origin of Sabine's difficulties. And something like half a century afterwards when the fields alluded to had been absorbed by bricks and mortar, and the smoke nuisance had increased ten thousand-fold, the taking the garden a mile nearer town may be said to be the origin of the difficulty which to-day has caused such wide-spread consternation among horticulturists, and which once more threatens to sap the foundation of the association.

But let it do so. The removal to South Kensington was in obedience to the edict of the time. The society was well nigh insolvent, its Regent-street property and magnificent library had been dispersed, Chiswick was dismantled and a comparative waste, and, as drowning men catch at straws, when the Royal Commissioners threw out the rope, the society clutched it with the desperation of insolvents who saw a prospect of tiding over the then difficulties, but now find it a rope of sand. The garden, beyond its position, never possessed one single element of success for a grand horticultural establishment. The languishing state of shrubs in the immediate neighbourhood ought to have demonstrated that fact, and neither soil, nor washing, nor care could make plants grow, whose lungs were sealed up by means of smoke and dirt. As a representative garden, except as representing what should not be done, nothing could be more complete than the failure of South Kensington; for, shorn of the little gaiety in the way of pot-plants which it draws periodically from Chiswick, there is scarcely an evergreen plant in the place which does not say, "I am sick, take me away." Therefore, as respects gardening, no one need shed a tear at the *finale*, should it come; and as for the tea-garden aspect of the matter of what best suits the Commissioners and the residents of the neighbourhood, let them take the garden and convert it into croquet grounds, or apply it to any other purpose as they may think fit—all gardeners can do without it. We, therefore, so far as the real interest of our calling is concerned, look upon the gathering storm with comparative indifference, and shall not be sorry to see the "Augean stable" cleansed of its present impurities. The Society, rehabilitated upon a better, broader, and more lasting foundation, under the auspices of true gardeners, may, like a good ship, float into calm water, and though with a smaller crew, do more in seven years for the real objects for which the Society was established than South Kensington will do in seven centuries, that is, supposing it to exist for that length of time.

No doubt an attempt will be made to patch up the present difficulties, but it is hoped that gardeners will recollect that the opportunity for reforming the affairs of the Society for which they have been looking has now come, and if they do not use it the fault will be their own.

FERTILISATION OF FLOWERS BY FLIES.

We are often attracted in autumn by the sight of a swarm of flies —indeed, I may say of bees and butterflies also—busily engaged on a clump of Michaelmas Daisies in full blossom. They rise almost in a cloud as we approach, and disappear, of course to visit some other floriferous clump within easy distance. It is just possible that this phenomenon may attract the notice of the gardener, and that he may regard it as a nuisance that ought to be done away with, and he may send to the nearest chemist for "some stuff" which is to effect a cure. Very rarely indeed will some Darwin stop in passing the clump of flowers to inquire of himself and of the insects what they are doing; however, this inquiry does now and then take place, and will always reward the inquirer with a fund of instruction. Eliminating the bees and the butterflies, let us fix our attention on some most familiar, most abundant, and most ubiquitous insects, commonly known as drone flies, and known by entomologists as Eristalis; there are many species, but three of these are so abundant that you literally see them on every flower; these I will call Tenax, Pertinax, and Sequax—all these names implying the pertinacity with which they return to their feast, however frequently they may be driven away. All of them are greedy devourers of pollen, and all of them devour it in the same manner; they thrust their proboscis among the florets, separate the two spreading valves with which its extremity is furnished, grasp a cluster of pollen granules, detach them from the flower, and swallow them. The operation of detaching the pollen granules is not performed without some skill and exercise of ingenuity, for in many flowers the granules are united together by slender tenacious threads, which must be broken before the granules can be swallowed. This swallowing of the pollen is very obvious to the patient observer; the granules, a few at a time, ascend the leathery proboscis and thence descend into the stomach, which becomes gorged with them, and from which they may be extracted, after the insect is killed, in a perfectly unaltered state. The yellow pollen granules frequently impart their colour to the abdomen, more especially to its sides and under surface. After the fly has swallowed a granule or mass of granules thus detached, it occupies several seconds in clearing its head from the granules, threads, and other impurities which still adhere to it—a process performed by its first pair of legs in a manner that strongly reminds one of a cat washing its face with its fore paws. I cannot take upon myself to assert that the three species of Eristalis are entirely destitute of the power usually attributed to them of imbibing the liquid honey of flowers; but I am quite clear that I have never detected them in the act, and I am also firmly convinced that pollen in a solid state will almost invariably and exclusively be found distending their bodies. I ought perhaps to state that the whole of my brief holidays in 1870 and 1872 was spent in studying these interesting flies.

We now approach another branch of the subject, and one on which Mr. Darwin has thrown much light. Recurring to the sight to which I have alluded, of the hosts of insects banqueting on a clump of flowers, it may possibly occur to a superficial observer that flowers have an especial duty to perform as regards the insect world—namely, that of feeding them. This, however, is but half the truth; the insect is as essential to the welfare of the flower as is the flower to the welfare of the insect. The curious genus Stapelia is fertilised solely by the larva of a fly, generally the common Musca vomitoria. This fly, attracted by the offensive smell of the flower, lays its eggs as far as it can in the tube of the corolla. These eggs hatching, the larvæ they produce come into contact with pollen granules, which adhere to them, and which they carry to the pistils, and thus fertilise them. A similar office is performed for Cerapegia by a small fly in the perfect state, which I have never found in any other situation than deep down in the tube of the corolla of this wax-like flower. The most interesting fact, however, remains to be told. Hermaphrodite flowers being provided with both stamens and pistils, pollen and ovary, one would suppose them amply furnished with the powers of reproduction, yet it has been abundantly shown that flowers fertilised by themselves do not produce such vigorous and healthy seeds and offspring as those fertilised by another flower of the same species; therefore the three species of Eristalis I have named—and I have given more particular attention to E. pertinax—when they have gorged themselves with the pollen of one floriferous clump, and have rioted among flowers until the pollen granules adhere to every part of their bodies, and have then flown away, or been driven away, to another distant clump of the same species, convey a new fertilising element to these distant clumps, and insure the production of more vigorous descendants, provided the seed is allowed to attain maturity. Hence the advantage of renovating by change; hence the disadvantage of breeding in and in; the nearer the degree of consanguinity, the less prospect is there of healthy and vigorous offspring.—*Edward Newman, in Field.*

HORTICULTURE AT THE INTERNATIONAL EXHIBITION AT VIENNA IN 1873.

FROM the following details which have been published with respect to this exhibition, it appears that preparations are being made for conducting it on a scale of considerable magnitude. The principal building will be 975 feet in length, and 650 feet wide. It will be erected in the Prater (the Bois de Boulogne of Vienna) and close to that part of the side of the Danube which has been lately embanked and laid out in an ornamental manner. The chief gallery, which runs though the entire length of the building, will have wide transepts on each side, arranged in such a manner as not to obstruct the view of the whole interior. Between these transepts and the great nave are the courts or gardens, and one or more of these transepts, with the corresponding garden and the part of the nave adjoining, will be devoted to each country. A vast rotundo or cupola rises from the centre of the structure, which will be the largest of the kind that has ever been erected, being 325 feet in diameter and 250 high. It will be made of iron after the design of Mr. Scott Russell. The principal gallery, which is 81 feet wide, will have its transepts 49 feet wide and 260 feet long. The covered part of the exhibition will occupy a space of over 25 acres. On the east of the rotundo of the Prater, the exhibition of fine arts will occupy a space of nearly 2 acres. From the principal building will extend covered galleries leading to an immense conservatory, and some smaller structures appropriated to horticulture and to aquariums. Machinery will be located in a separate gallery 2,925 feet long and 88 feet wide. The imperial villa and the hall in which the jury will deliberate are to be erected in the gardens, the laying out of which has been entrusted to a distinguished landscape gardener.

The following is the programme of the general conditions relating to the horticultural section of this exhibition :—

1. A Horticultural Exhibition can in general comprise only (A.) Living or dried plants, or parts of such plants. (B.) Practical illustrations of various modes of culture. (C.) Objects of art and industry, in so far as they either contribute to, or are the results of, horticulture.

2. All dried plants which have been grown in gardens, fresh fruit, grapes on their vines (with the exception of those grown in houses) as well as exotic fruits, will not, for reasons of convenience, be submitted to the jury who will decide on horticultural products, but will be referred to the jury of the agricultural section. They will, however, as objects of exhibition, be placed in the horticultural division.

3. Garden tools will be placed in the section for agricultural implements.

4. In order to form an exact estimate of the condition of horticulture in the different countries of Europe, and of their productions during an entire season of growth, it is indispensable to have two exhibitions, of which one, conducted more especially in the open air and representing the various systems of culture in use, will be permanent, while the other will be divided into four temporary exhibitions of short duration, and arranged with reference to the season and its productions.—(A.) The permanent exhibition will be held from the 1st to the 31st of October. (B.) The four temporary ones as follows:—

The first, from the 1st to the 10th of May, inclusive.
The second, from the 15th to the 25th of June, inclusive.
The third, from the 20th to the 30th of August, inclusive.
The fourth, from the 18th to the 23rd of September, inclusive.

5. Consequently each exhibitor may show either at one or more of these exhibitions.

6. Agreeably to the decision of the general directory, exhibitors from the Austro-Hungarian dominions must send in their applications to the provincial commissions of the Exhibition before the 1st July. 1872, in order that they may be submitted to the director-general of the Exhibition before the 1st of August, 1872. Foreign commissions are requested to send in their lists of exhibitors to the director-general before the 1st of January, 1873. In his application the exhibitor is to state whether he intends to show in the permanent or in one of the four temporary exhibitions, and in the latter case, to state which. At the same time he must mention how much space he will require, in a printed form which will be supplied to him.

7. All objects sent for exhibition must be delivered within the grounds of the Exhibition in the place which has been assigned to them, at least three days before the opening of the Exhibition. Those exhibitors who wish to show in the permanent exhibition will be at liberty to place their contributions as they please, and are requested to give timely notice of their intentions in this respect to the general directory.

8. For horticultural objects exhibited in the open air in the park, either at the permanent or the temporary exhibition, a charge for space will be made at the rate of one florin (Austrian money) for the square mètre. In the covered part of the exhibition the charge for the same space will be three florins.

9. The director-general will do all he can to obtain from the Austrian railway and other transport companies a reduction of rates for the carriage of objects intended for exhibition. The results of his exertions in this way, as well as any reduction of rates that may be obtained by foreign commissions, will be published by the director-general before the first of July, 1872.

10. The transplanting of plants and the care of them during the exhibition, will be at the expense of the exhibitor or his representative. The director-general cannot take upon himself any responsibility respecting them.

11. No object can be removed by the exhibitor before the end of the exhibition for which he has applied, without the special permission of the director-general. This permission will be given at once, if the exhibitor engages to replace the objects removed by other suitable ones.

12. Objects shown at any of the four temporary exhibitions must be removed by the exhibitors at the expiration of the time fixed on for the close of the exhibition; otherwise they will be removed ands old at the exhibitors' expense. If the exhibitor does not claim the product of the sale within three months afterwards, he will be considered to have renounced all claim to it.

13. Exhibitors may have themselves represented by agents or by the commission of the country to which they belong, and may give them instructions to remove and sell their property.

14. All objects in this section (with the exception of those which the exhibitors do not wish to have judged) will be submitted to the decision of an international jury. Special regulations on this point will be published later.

15. The prizes will be awarded by the international jury, in conformity with the regulations contained under the fourteenth heading of the general programme.

16. Questions relating to the sending, receiving, and placing of objects, of which no mention is made in this special programme, are disposed of under the third heading of the general regulations.

COVENT GARDEN MARKET.

FEBRUARY 28TH.

Flowers.—Of these there is now a large assortment, prominent amongst which are Chinese Primulas, Cyclamens, Heaths, Tulips, Cinerarias, Hyacinths, small Azaleas, Callas, Cytisuses, and Enacrises. There are, moreover, small evergreen Conifers and other plants of that kind. Cut flowers consist of Orchids, Lily of the Valley, Rose-buds, Camellias, Azaleas, Acacia Riceana, Violets, Fuchsias, Pelargoniums, both zonal and show kinds, Amaryllises, Deutzias, and others.

Fruit.—Home grown Pines are scarce, but some of them are excellent; a good supply is, however, still furnished from St. Michaels and Sierra Leone. English Grapes are good; they consist chiefly of Barbarossa, Lady Downes, and Trebbiano. Strawberries still make their appearance. Pears and Apples are comparatively scarce.

Prices of Fruits.—Apples, per half sieve, 3s. to 5s. 6d.; Cobs, per lb., 2s. to 2s. 6d.; Grapes, hothouse, per lb., 6s. to 12s.; Lemons, per 100, 4s. to 8s.; Melons, Spanish, each, 2s. to 3s.; Oranges, per 100, 4s. to 8s.; Pears, per doz., 8s. to 12s.; Pine-Apples, per lb. 6s. to 10s.; Walnuts, per 100, 2s. to 3s.

Prices of Vegetables.—Asparagus, per bundle, 8s. to 25s.; Beans, French, per 100, 2s. to 3s.; Beet, Red, per doz., 1s. to 3s.; Broccoli, per bundle, 9d. to 1s. 6d.; Cabbage, per doz., 1s. to 2s. 6d.; Carrots, per bunch, 4d. to 6d.; Cauliflower, per doz., 2s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 3s. 6d. to 5s.; Cucumbers, each, 2s. to 3s.; Endive, per doz., 1s. to 2s.; Fennel, per bunch, 3d. to 6d.; Garlic, per lb., 4d. to 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 5s.; Leeks, per bunch, 2d. to 6d.; Lettuces, per score, 1s. to 2s.; Mushrooms, per pottle, 2s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 2s. to 5s.; pickling, per quart, 6d. to 9d.; Parsley, per doz. bunches, 3s. to 4s.; Parsnips, per doz., 9d. to 1s.; Potatoes, Kidney, per cwt., 10s. to 15s.; Potatoes, Round, per cwt., 10s. to 15s.; Radishes, per doz. bunches, 6d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Seakale. per punnet, 1s. 6d. to 2s.; Scorzonera, per bundle, 9d. to 1s.; Spinach, per bushel, 3s. to 4s.; Tomatoes, per doz., 1s. to 3s.; Turnips, per bunch, 3d.

LONDON FRUIT AND VEGETABLE MEASURES.

THESE being made either of wicker-work or deal shavings, vary triflingly in size more than measures made of less flexible materials.

Sea-kale Punnets.—Eight inches diameter at the top, and seven and-a-half inches at the bottom, and two inches deep.

Radish Punnets.—Eight inches diameter, and one inch deep, if to hold six hands; or nine inches by one inch for twelve hands.

Mushroom Punnets.—Seven inches by one inch.

Salading Punnets.—Five inches by two inches.

Half Sieve. Contains three and-a-half imperial gallons. It averages twelve and-a-half inches in diameter, and six inches in depth.

Sieve.—Contains seven imperial gallons. Diameter fifteen inches, depth eight inches. A sieve of Currants twenty quarts.

Bushel Sieve.—Ten and a-half imperial gallons. Diameter at top seventeen inches and three quarters, at bottom seventeen inches; depth eleven inches and a quarter.

Bushel Basket.—Ought, when heaped, to contain an imperial bushel. Diameter at bottom ten inches, at top fourteen inches and a half: depth seventeen inches. Walnuts, Nut, Apples, and Potatoes are sold by measure. A bushel of the last-named, cleansed weighs 56 lbs., but 4 lbs. additional, are allowed if they are not washed. A junk contains two-thirds of a bushel.

Pottle.—Is a long tapering basket that holds rather over a pint and a half. A pottle of Strawberries should hold half a gallon, but never holds more than one quart; a pottle of Mushrooms should weigh one pound.

Hand.—Applies to a bunch of Radishes, which contains from 12 to 30 or more according to the season.

Bundle—Contains 6 to 20 heads of Broccoli, Celery, &c.; Seakale 12 to 18 heads; Rhubarb, 20 to 30 stems, according to size; and of Asparagus from 100 to 125.

Bunch—Is applied to herbs, &c., and varies much in size according to the season. A bunch of Turnips is 12 to 25; of Carrots 15 to 40; of greens as many as can be tied together by the roots.

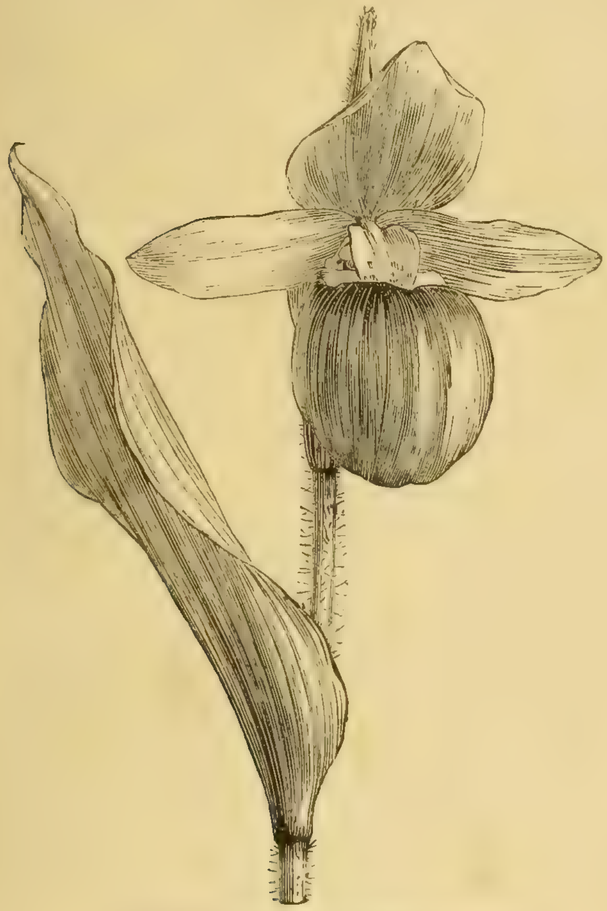
Grapes are put up in 2 lbs. and 4 lbs. punnets; new Potatoes, by the London growers, in 2 lbs. punnets. Apples and Pears are put up in bushels, sieves, or half sieves. A hundred weight of Kentish Filberts is 100 lbs. Weights are always 16 ozs. to the pound.

THE GARDEN.

> "This is an art
> Which does mend nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

HARDY LADY'S SLIPPERS.

How rarely it is that one has an opportunity of inspecting any of the hardy Lady's Slippers in bloom. The first time we visited Messrs. Backhouse's Herbaceous Plant Nursery at York, we were agreeably surprised to find two species of hardy Cypripediums growing vigorously, viz., C. Calceolus—our British representative of the genus, and C. spectabile, the former being in full flower. A great patch, sheltered by a huge boulder, was luxuriating in an eastern aspect in a loamy soil, with an admixture of chalk. Here, bathed in the morning sunlight, at least thirty open flowers swayed to and fro in the cool breeze. C. spectabile was coming up strongly from a bed of peaty soil, and promised fair to yield a fine display of blossoms. How is that we import hardy Lady's Slippers, and lose them? Simply because we object to nature as a teacher. We gather herbaceous plants in moist, shady valleys, surrounded by fresh sphagnum, and moistened by the rippling brook or trickling mountain stream; and then we wonder why they do not luxuriate with us at home, in our borders or in pots, when subjected to every vicissitude of heat and moisture. It should be one of the first considerations with us to select a nice warm corner for any rare plant we meet with in our travels, and yet they are often planted in the dry, harsh soil of an ordinary border, where irregularity in the supply of water and a scorching sun soon complete their work. We should recommend everyone interested in the culture of hardy Cypripediums and other choice moisture and shade-loving plants to spend a week in exploring the sheltered ravines (in the vernacular "gills") to be found in many parts of Yorkshire and other northern counties. Down these gills a splashing stream, generally as clear as crystal, tumbles over rocks and boulders, or ripples smoothly over polished pebbles, while speckled trout dart here and there from the shallows into the deepening shade of the overhanging fern-clad banks. The lesser tributaries of these hillside streams often spread themselves out, forming miniature bogs and moist patches, on which sphagnum moss grows in profusion. The ground shakes as we proceed, and if one stands for a few seconds the water oozes up from the peat and moss, and forms little lakes around our feet. Would that we had these spongy bogs and cool peat-beds covered with fresh sphagnum in our gardens; then we should not have to lament over the loss of our hardy Cypripediums. How they would luxuriate in such positions along with Sarracenia purpurea, Darlingtonia californica, and many other plants, among which may be named Fritillarias, Lilies, and sub-aquatics that at present defy our best endeavours to cultivate them either in pots or in the common type of herbaceous borders.



The Showy Lady's Slipper (Cypripedium spectabile).

We now propose to enumerate and describe all the hardy Cypripediums at present in cultivation, with remarks on the treatment and positions suitable for each kind.

Cypripedium spectabile.—The most beautiful of the genus; 15 inches to 2½ feet high. Flowers in summer, one or two (rarely three) on each stem; large, handsome, white, with a much inflated rounded lip, about 1½ inch long, white, and marked with a large blotch of bright rosy-carmine in front. A variety (C. s. album) has the lip entirely white. Leaves oval, pointed, pubescent, veined. N. America, from Canada to Carolina, in marshy places. Thrives to perfection in the artificial bog, and does well in moist borders. It should always be planted in deep, moist peat or vegetable soil, in a sheltered, half-shady position.

Cypripedium pubescens.—A dwarfer species than the last-named, with a pubescent stem, seldom more than 2 feet high. Flowers early in summer, one to three on each stem, scentless, greenish-yellow, more or less spotted with brown, with a pale yellow lip from 1½ to 2 inches long, and flattened at the sides. Leaves broadly-oval, pointed, pubescent. America, in bogs and low woods, from Pennsylvania to Carolina. Does well on dry sunny banks, among loam, stones, and grit.

Cypripedium guttatum.—A handsome rare kind, seldom seen in gardens. Grows from 6 to 9 inches high. Flowers in summer, solitary, rather small but beautiful, white, heavily blotched or spotted with deep rosy-purple. Leaves two, alternate, oval-elliptical, pointed, downy. Canada, N. Europe (near Moscow), and N. Asia, in dense forests amongst the roots of trees in moist, black vegetable mould. Requires a shady position in leaf-mould, moss, and sand, and should be kept rather dry in winter.

Cypripedium macranthum.—This species bears a considerable resemblance to C. ventricosum, but has lighter-coloured flowers. It grows about a foot high. Flowers early in June, large, of a uniform purplish rose-colour with deeper-coloured veins. Lip globose, inflated, finely marked with deep purple reticulations. Siberia. This handsome, and at present rare species, may be treated in the same manner as C. guttatum.

Cypripedium acaule.—A dwarf species with a naked downy flower-stalk from 8 to 12 inches high, and bearing a green bract at the top. Flowers early in summer, large, solitary, of a greenish colour, with a rosy-purple (rarely white) lip, which is nearly 2 inches long, and has a singular closed fissure down its whole length in front. Leaves two, at the base of the flower-stem, oblong, obtuse, downy. Northern States of North America, in woods and bogs. Requires a shady position in moist peaty soil or leaf-mould.

Cypripedium Calceolus.—The only British species of Cypripedium, and the largest flowered of our native Orchids. Grows from 1 to 1½ foot high. Flowers in summer, solitary (sometimes two), large, of a dark-brown colour, with an inflated clear yellow lip netted with darker veins, and about 1 inch in length. Leaves generally three or four in number, large, ovate, pointed, veined. North Europe, and occasionally found in the northern counties of England, where, however, it is now almost exterminated by unscrupulous plant gatherers. A very ornamental plant for the rock-garden, where it should be planted in sunny sheltered nooks in calcareous soil, or in narrow fissures of limestone rock well drained, in rich fibrous loam. It prefers an east aspect.

Cypripedium ventricosum.—A dwarf species, with an erect, slightly angular stem 1 to 1½ foot high. Flowers early in summer, one or two on each stem, large, of a reddish-purple, with a very large inflated lip of a brilliant purple hue, edged with pure white round the mouth. Leaves three, broadly ovate, acute, thickly clothed on both sides with short hairs. Eastern Siberia. Requires a shady position in peaty loam or leaf-mould.

Cypripedium candidum.—A dwarf small-flowered kind, 8 to 15 inches high. Flowers early in summer, solitary, greenish-brown with a white lip about the size of a sparrow's egg, and marked with rose-coloured dots on the inside. Leaves oblong, lance-shaped, acute, slightly pubescent. North America, in bogs from Central and Western New York to Kentucky and Wisconsin. May be grown in the artificial bog, or in moist peaty spots near the rock-garden, but is best suited for a botanical or curious collection.

Cypripedium arietinum.—The smallest species of Cypripedium, with a slender stem 6 to 10 inches high. Flowers in summer, solitary, greenish-brown, with a red and whitish-veined lip half an inch long. Leaves three or four, elliptical-lance-shaped, nearly smooth. North America, from Maine to New York, Wisconsin, and northward. Will thrive in a shady position in the artificial bog, or in a moist sheltered border in peaty soil.

Cypripedium parviflorum.—Resembles C. spectabile, but is somewhat dwarfer, and has darker petals and sepals and fragrant flowers. Grows from 1 to 2 feet high. Flowers early in summer, greenish-yellow spotted with brownish-purple; lip bright yellow, 1 inch or less in length. Leaves oval, pointed. Northern States of America; rather common in bogs and low woods. Culture and positions as for C. arietinum.

All the foregoing may also be grown in pots, in the soil recommended for each, care being taken to give them an abundant supply of water during the summer.

Astilbe (Spiræa) japonica.—This beautiful hardy plant may be increased by division of the roots, or by means of cuttings, and plants produced in both ways soon make good flowering specimens, if well supplied with water during spring and summer, when the weather is dry. Divide the old plants into small pieces, each furnished with eyes, and plant them in good rich ground, a foot apart. Plants to be broken up must not have been forced this year. If cuttings are preferred, take them from plants that have done flowering, and strike them in heat. When rooted pot them off into 3-inch pots, and place them in a warm dung frame until they have become well established, after which harden them off. Plants raised from divisions may be put out in the latter end of May or in the beginning of June, well watering them in at planting time. In order to prepare them for forcing, they should be lifted in October, and plunged in leaves, as they root all winter. After they have been introduced into heat, give them plenty of water, or they will not flower.—W. Howard, *Balham.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Primula altaica.—Allow me to commend this beautiful Primrose to the notice of your readers. It is as hardy and as easy to grow as the common Primrose, but, blooming as it does in midwinter, it requires the protection of a cold frame to display its beauties.—J. W.

Parochetus communis.—This lovely plant has been blooming here, in a cool house, throughout the winter. In Derbyshire it will not survive the winter in the open air, but requires the protection of a cold frame. I had a very fine plant of it half a yard across in one of my herbaceous borders last summer, but it has perished during the late severe weather.—J. Whittaker, *Morley, near Derby.*

Odour of Flowers.—The delicate odour of Pinks and other flowers may be obtained as follows:—Get a glass funnel, with the narrow end drawn to a point. In this place lumps of ice, with salt, by which a very low temperature is produced. The funnel should be supported on an ordinary retort stand, and placed near the flowering plants, when water and the ethereal odour of the blossom will be deposited on the exterior of the glass funnel, and will trickle down to the point, from which it drops at intervals into a glass vessel below. The scent thus obtained is very perfect and interesting, but is apt to become sour in a few days, unless some pure alcohol is added. By this process many odours may be procured for comparison and study. To obtain the odour in perfection the blossom must be in its prime.—*My Garden.*

GARDEN DESIGN.

A GARDEN ESTABLISHED IN SIX MONTHS.

The seeming miracle of a garden and grounds well furnished with full grown trees being created out of a wilderness in a few months is one very easily accounted for and very easily performed if set about in the proper way. Given a wood with a few grand old trees in it, on a pleasant slope towards the south or south-west if possible, and all the rest is easy. Sparing all really fine old trees, let the bulk of the others be cleared away and the roots stubbed up, leaving of course a sufficient number of those which are handsomely grown—a few masses with their original underwood, with occasionally a single tree, if in a good position, even of the smaller growths, and a capital beginning is already made. A large space must of course be entirely cleared for the open flower garden, and some of the main wood left intact and wild for shady untrimmed walks. This commencement, with the subsequent introduction of some fine full-grown shrubs, both deciduous and evergreen, carefully transplanted with masses of their own earth about their roots, will form such a nucleus for a fine garden and grounds as would, if all the trees had to be planted, require from ten to fifteen years to establish. Supposing the operations above described to have been carried through in November, and space for the flower garden planned and laid out at the same time, herbaceous plants, perennial and biennial, might be at once put in, as well as the seeds of many kinds of spring annuals; also an abundance of bulbs and tubers, such as Crocuses, Snowdrops, Tulips, many varieties of Gladioli, as well as a host of other things. With this preparation effected in November, a noble garden and park-like grounds and shrubberies would be the result in the following spring, a result which would have all the appearance of a grand and long established garden belonging to some fine old place.

This suggestion for creating suddenly an improvised garden might appear a somewhat chimerical one, even to the writer, had he not seen a closely analogous plan successfully carried out, and a piece of tangled woodland of some seven or eight acres, possessing no beauty whatever, suddenly transformed into one of the most attractive gardens that can be imagined. The example here alluded to is one belonging to Mr. Leslie, of Courtmaosherry, a picturesque spot situated near the shores of a beautiful bay, and near a remarkably pretty village in the finest portion of the south-west coast of Ireland. The residence, with a moderate-sized garden and shrubberies of the usual character, had been long established, when it occurred to the proprietor, an ardent lover of horticulture, to add an adjoining wood to the old garden, and so make the flower garden and shrubberies the principal feature of the Place. The idea was no sooner conceived than carried into execution; and within less than a year a noble flower garden, in a series of terraces connected by handsome flights of stone steps, with suitable architectural adjuncts, occupied the place of the uninteresting wood, which had not a single remarkable feature about it. The view from the upper turf terrace, or rather level, for it is of very considerable breadth, is extremely attractive; and from that position the middle and lower levels exhibit their broadly-planned geometric design to great advantage, and their large masses of flower colour tell out with wonderfully fine effect. The breadth and grandeur of the effects obtained in this garden are greatly owing to the simplicity of the treatment, the formality of the geometrically-planned flower-beds being rendered less obvious by the avoidance of regularly trimmed borderings and the too common pincushion fashion of one line of colour within another. By means of avoiding these obtrusively mechanical arrangements, symmetry of effect is retained while mechanical formalism is avoided. The planting of the flower-beds on the upper level, necessarily seen first on emerging from the shrubberies, is principally on the mixed border system, and consequently harmonises well with the mixed shrubberies with which they stand in juxtaposition. On the next level below, each bed is filled by an undisturbed mass of colour composed of plants of the same kind, furnishing a fine broad sweeping dash of colour in the picture; or the planting of two kinds of plants, but not more, has been resorted to with the view of breaking up the effect of too frequent a repetition of masses of the primary colours, red, blue, or yellow. For instance, the too great brilliancy of a splendid bed of Gladiolus gandavensis is tempered by an equal admixture of a fine large-leaved Hibiscus—a very successful mixture. A similar effect is produced in another place by the mixture of groups of Sweet Peas with plants of one of the largest leaved of the tobacco tribe. This sounds simple enough, and simple it is, and it is, in short, the very simplicity that is so delightful. On the lowest level, to be first seen at a greater distance, the arrangement of colour is necessarily more trenchant. The strongest colours are used, and are, as a rule, unmixed, the distance tending to soften, and the unmixed colour to impart a sufficient degree of distinctness to the intention of the plan.

To the right of the more or less formal flower garden is a plantation of low evergreen shrubs, irregularly planted, and blending eventually with masses of wood, while to the left is a pretty natural rockery, varied in effect by a natural stream that comes rattling down the slope with the sweet sounds of falling water. It plunges over many impediments of Lichen-covered rock, with curling ringlets of spray, or rather, as Shelley wrote—

> It leaps from the rocks
> With its diamond locks,

as it makes its way impetuously down to the lower level. On its way it is made to form a picturesque rocky pool, in which many of the most attractive kinds of water plants are seen, white and yellow Water-Lilies, and the great flowering Rush, and many kinds of Iris, but more especially there are noble plants of the great white Arum, growing most luxuriantly under conditions apparently most favourable, as they are continuously throwing up masses of their grand single-petalled flowers, each an embodiment of grace in its exquisite convolution.

The rockery is well filled in every cranny of vantage with Alpine plants in great variety, several kinds of which flourish amain among these little Irish Alps. In places where the rocks present large smooth surfaces they are occasionally clothed with a profuse growth of the finer varieties of Clematis, such as Jackmani, Sieboldi, and others. In short this portion of the Courtmacsherry Gardens is extremely attractive, and terminates towards the remains of the wood with a broad border of mixed flowers, which, being irregularly planted, blend picturesquely with the adjoining wood and its undergrowth. At the back of the border are Hollyhocks, American Asters, Japanese Anemone, perennial Sunflower, Rudbeckia, rank-growing Campanulas, and other plants which attain from 2 feet to 3 or 4 in height. Towards the middle are clumps of Japan Lilies, both rose and white, and great masses of the common Tiger Lily were in flower at the time of my visit. In front are lower growing plants—Carnations, Verbenas, Lobelias, and others. The herbaceous plants of this irregular border are so intermingled with low-growing shrubs that it has rather the effect of a natural ridge peculiarly rich in magnificent wild flowers than of a skilfully planted flower border.

In all this, which is so pleasing, so untormented, and so generally satisfactory, I do not imagine that any vast amount of high horticultural accomplishments have been lavished; on the contrary, I take it to be the result of pure common sense, guided by the requirements of a naturally refined taste. H. N. H.

The Finest Fruit in the World.—The Durian, a fruit about which very little is known in England, but which is reckoned by natives and Europeans in the Malay Archipelago to be the finest fruit in the world, grows in great abundance in Java and Borneo. It grows on a large and lofty forest tree, somewhat resembling an Elm in its general character, but with a more smooth and scaly bark. The fruit is round or slightly oval, about the size of a large Cocoanut, of a green colour, and covered all over with short stout spines, the bases of which touch each other, and are consequently somewhat hexagonal, while the points are very strong and sharp. It is so completely armed, that if the stalk is broken off it is a difficult matter to lift one from the ground. The outer rind is so thick and tough, that from whatever height it may fall it is never broken. From the base to the apex five very faint lines may be traced, over which the spines arch a little; these are the sutures of the carpels, and show where the fruit may be divided with a heavy knife and a strong hand. The five cells are satiny white within, and are each filled with an oval mass of cream-coloured pulp, imbedded in which are two or three seeds about the size of Chestnuts. This pulp is the eatable part, and its consistence and flavour are indescribable. A rich butter-like custard highly flavoured with almonds gives the best general idea of it, but intermingled with it come wafts of flavour that call to mind cream-cheese, Onion-sauce, brown sherry, and other incongruities. Then there is a rich glutinous smoothness in the pulp which nothing else possesses, but which adds to its delicacy. It is neither acid, nor sweet, nor juicy, yet one feels the want of none of these qualities, for it is perfect as it is. It produces no nausea or other bad effect, and the more you eat of it the less you feel inclined to stop. In fact, to eat Durians is a new sensation, worth a voyage to the East to experience.

The delicate flowers
With scented breath, and look so like a smile,
Seem, as they issue from the shapeless mould,
An emanation of the indwelling life,
A visible token of the upholding love,
That is the soul of this wide universe.

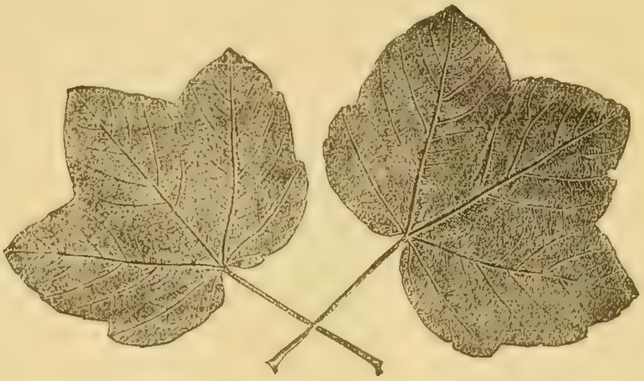
THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE IBERIAN MAPLE (ACER IBERICUM).

This forms a neat slow-growing deciduous tree, from 15 to 20 feet high, with rigid branches regularly furnished with short, tapering, stiff, smooth brown laterals in opposite pairs. It is a native of Asiatic Georgia, and is found on the mountains that separate the ancient kingdoms of Iberia and Colchis. It was first introduced in 1838. The leaves are rather small, bluntly three-lobed, or sometimes visibly five-lobed, quite flat, cordate at the base, slightly toothed on the edges, of a thick leathery texture, and set on stiff foot-stalks, which are rather shorter than the leaves and tinged with red. They are bright glossy green above, glaucous beneath, and quite smooth on both surfaces, and remain on the tree until rather late in the season. The lobes are broad, oval, slightly pointed, and equal in size. The flowers are greenish-yellow, and are produced in loose terminal corymbs in May. The fruit or keys are of medium size, and smooth, with round carpels and broad wings slightly diverging. The Iberian Maple is well suited for planting singly on lawns, on account of its neat appearance and slow growth. It is the Acer coriaceum of botanists; but not that of the nurseries, which is only a variety of the common Sycamore. The length of a full-sized leaf is 4 inches, including the foot-stalk, which is 1½ inch long, and the breadth is 3 inches.



Acer ibericum.

EGYPTIAN PETRIFIED FORESTS.

A locality in the Arabian Desert, abounding in specimens of silicified wood, has been noted in Guide-books and other works on Egypt as the "Petrified Forest." Specimens which I brought from this locality have been described by my colleague, Mr. Carruthers, and referred to two species of Unger's Nicolia. The dicotyledonous and non-coniferous character of the fossil trees was previously determined by Robert Brown, from specimens brought home by Lieut. Newbold in 1842. Soon after my arrival in Cairo this winter, I heard of a new locality in the Lybian Desert, equally deserving, from the quantity of fossil portions of trees, to be called a "petrified forest." The attention of Dr. Grant, an accomplished physician of Cairo, and of Wayman Dixon, Esq., who is superintending the erection of a bridge over a division of the Nile, was directed to a conical hill seen from the summit of the Great Pyramid due west, on the horizon of the Lybian Desert. They thought it might be a ruined pyramid, and rode to the hill. It proved to be a natural elevation, but their journey of about ten miles was repaid by finding trunks and branches, and smaller fragments of trees converted into flint or chalcedony, at the base of the hill, and scattered for a great extent around. Dr. Grant was good enough to accompany me to the locality. We left Cairo in a carriage and pair, at eight a.m., and arrived at the Pyramids of Ghizeh about ten a.m. There mounted donkeys, which had previously been ordered, and rode on to the hill, with Arabs and spare donkeys, reaching its base at 12.30 p.m. Near this I measured a prostrate trunk half-buried in the desert, 42 feet in length and 3 feet in diameter. A branch, 2 feet across at its origin, was sent off at 30 feet from the root-end of the trunk, which then shrunk to 2 feet in dia.

meter. The branch was broken away near its origin, exposing a cavity leading to the larger one forming the hollow of the trunk, indicative of the age of the tree. The whole formed one splendid mass of chalcedony. The knots and concentric rings of growth were conspicuous. Near this, and for a mile or more which we explored, were numerous other specimens of trunks and branches and smaller scattered portions of wood all in the same silicified state. The rounded conical hill, for which the Arabs had no name, and which Dr. Grant proposed to call "Kom Whashab" or "Coombe of Wood," consists of reddish miocene tertiary deposit of the same age as the similarly coloured strata overtopping the cliffs of older tertiary limestone on the opposite side of the Nile valley near Cairo. Some of the tree-trunks had been fractured transversely, and at distances so regular as to suggest a segmental structure. I counted twelve of these sub-equidistant fissures in an extent of trunk of 7 yards. The longitudinal fibres are bent outwards along the fissure, which makes the cherty matter filling it to slightly project; but neither this appearance nor the equal intervals of the cracks are constant, and I come to this conclusion, that the seeming segmentation was due to posthumous change. In several of the trunks the tunnels or tracts of boring larvæ, probably of a xylophagous beetle, were obvious. I brought away specimens of the silicified wood, sparing to the utmost the grand trunk, which, however, if the "Lybian petrified forest" becomes one of the "sights" to be visited from Cairo is not likely to last long. It afforded us a seat during luncheon, as a prostrate Oak has done in picnics in Richmond Park. The desert scenery with the summits of the distant pyramids is most impressive; but the retrospect of historical events which they suggested seemed but as of yesterday in comparison with the lapse of time which the mind strove to grasp in speculating on the continent where our seat of stone grew and flourished ere it fell and drifted to the tertiary ocean whose upraised bed now forms the wilderness which stretches away like a boundless sea to the horizon. Richard Owen.

Cairo, Feb. 7th.

Old Oak and Yew Trees.—There are as many Oaks named after William the Conqueror as there are old, feudal towers attributed to Julius Cæsar, and there are at least some trees to which even a higher antiquity may be indubitably assigned. The oldest and largest tree of which Windsor can boast is the "King Oak," which Loudon tells us is said to have been a favourite with the Conqueror when he inclosed the forest. It is 26 feet in circumference, and is supposed to be a thousand years old. More famous still is the Winfarthing Oak, near Diss, in Norfolk, which tradition asserts was known as "the old Oak" even in the Conqueror's time. Immediately above the root its circumference is 70 feet, and 40 feet at the middle of the bole. According to the best authorities this Oak is believed to be not less than 1,500 years old! Not many buildings now existing, except in ruins, are so ancient as this tree. In the Conqueror's time it might well be called "old," for it had then seen some 700 summers. It was an old tree when Alfred the Great was fighting the Danes and founding the English monarchy; in fact, it may be said to have lived through the whole "History of England." Another tree, the sober-mantled Yew—associated in our thoughts with the peaceful parish churchyard—attains a remarkable size and longevity. Numbers are to be found with a girth of 25 or 27 feet; and there is one at Ankerwike, near Windsor, which is believed to be 1,000 years old, and which, therefore, must have been flourishing in ripe maturity when King John was signing Magna Charta on the neighbouring Runnymede. Another famous Yew grew near Fountains Abbey, whose age, as indicated by the concentric rings of its trunk, must have been about 1,214 years. Scientific deduction was in this instance corroborated by history, for it is on record that, while the abbey was being built, in 1133, the monks were accustomed to take shelter under it from the rain.

Transplanting Trees.—The best and simplest contrivance which I ever used for the purpose of moving trees and shrubs up to half a ton in weight was one suggested by Mr. Thomas, when I was carrying out some alterations under his directions some eighteen years ago in the South of England. It was made by a common blacksmith, and the cost was only a few shillings. It consisted of a piece of sheet iron, 4 feet long 3 feet wide, strengthened by two thin bars of iron running lengthways from end to end, 10 inches from each side, and, consequently 16 inches apart; these iron bars were about an inch wide and about an eighth of an inch thick. There were also similar bars of iron riveted across each end, into which four stout rings (two at each end) were inserted. As soon as the tree or shrub was ready for removal the ball was elevated on one side; the short iron platform slid under, and the ball let down upon it. A stout rope was passed through the rings diagonally from end to end, and round the ball and trunk of the tree, to make all firm and secure. One side of the hole being levelled down, a horse was hooked to the rings at one end, and the whole mass glided off to its new position in little more time than I have taken to describe the operation. The longitudinal bars are of course on the bottom where the friction is, but the transverse bars are on the upper side. For moving shrubs on turf, or on soft ground, the longitudinal bars are scarcely necessary. We had the strongest one made for moving plants on the carriage roads, where the friction was more severe. It will be found in practice that the ends will bend up slightly, thus in some measure reducing the strain on the motive power.—E. Hobday.

Cerasus ilicifolius.—In your issue of the 15th ultimo you inquire whether this has ever been tried out of doors in the south of England. I can reply that here (Isle of Man) it does perfectly well in the open air in favourable situations. I have had a plant of it exposed for several years in but a tolerable position, and it is now in excellent health, though it is not a vigorous grower. Many plants reported to be tender in England do admirably here. Among others, I may cite Osmanthus, Desfontainea, Cordyline australis (which grows into a magnificent tree), Aloysia citriodora, Phormium tenax, many shrubby Veronicas, also Fuchsias, Magnolia grandiflora, Chamærops Fortunei, many species of Mexican Conifers, &c. Can any of your readers inform me whether Laurus regalis has proved itself hardy throughout England? With me it has become a beautiful shrub, and grows with great luxuriance. Its aroma is so peculiar and powerful that I should think it might prove of some commercial or economic value. I would further inquire whether Tree Ferns have ever been tried in the open air in the southern counties of England.—W. F.

Old Yew Tree.—In the churchyard here is a very fine and ancient Yew, out of which I am at present having some dead branches cut. The tree is for the most part in a highly flourishing condition, but in one part of its stem there is a large hollow, and it is thereabouts much decayed. It appears to me that all this decayed part which can be reached should be cut out and then painted or tarred over to arrest the progress of the decay, of which there is a good deal, though little compared with the size of the tree, which is well worth preservation, inasmuch as it is about 60 feet in height, covers an area of about 50 feet in diameter, and is 23 feet in circumference at 3 feet from the ground. Possibly some one learned in the preservation of trees would communicate what is best to do in such a case.—Montague Williams, *Woolland House, Blandford.*

Trees and Rain.—A good deal of needless alarm exists at the prospect of great droughts appearing when forests shall have been cut away. The statements made by Taylor, Humboldt, and others to prove this are of doubtful application. It is true that a country is more moist where forests abound, but the amount of rainfall of a country cannot depend upon the presence or absence of trees. The whole of America from Indiana to the Missouri River is mainly a vast prairie, and yet the rainfall is equal to what it is in the timbered regions of the Atlantic States, or even of Canada and Maine, where there are unbroken forests. If there were not a tree on the whole of the British Islands, they would still be drenched with showers condensed from the warm and damp winds of the Gulf Stream. The Rocky Mountain region is far from being destitute of trees; indeed, there are vast forests; and yet along the borders of the mountains, upon the plains, three, six, and sometimes nine months pass and not a drop of rain falls. Rainfall depends upon climatic conditions, which trees cannot affect, though forests retain water long when it does come. Q.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Measuring the Heights of Trees.—When the sun is shining so that the tree casts a shadow, set a stick upright near at hand. Mark the extremity of the shadow of the stick and also of the tree. Then as the length of the stick's shadow is to the length of the stick, so is the length of the tree's shadow to the height of the tree.—Beta.

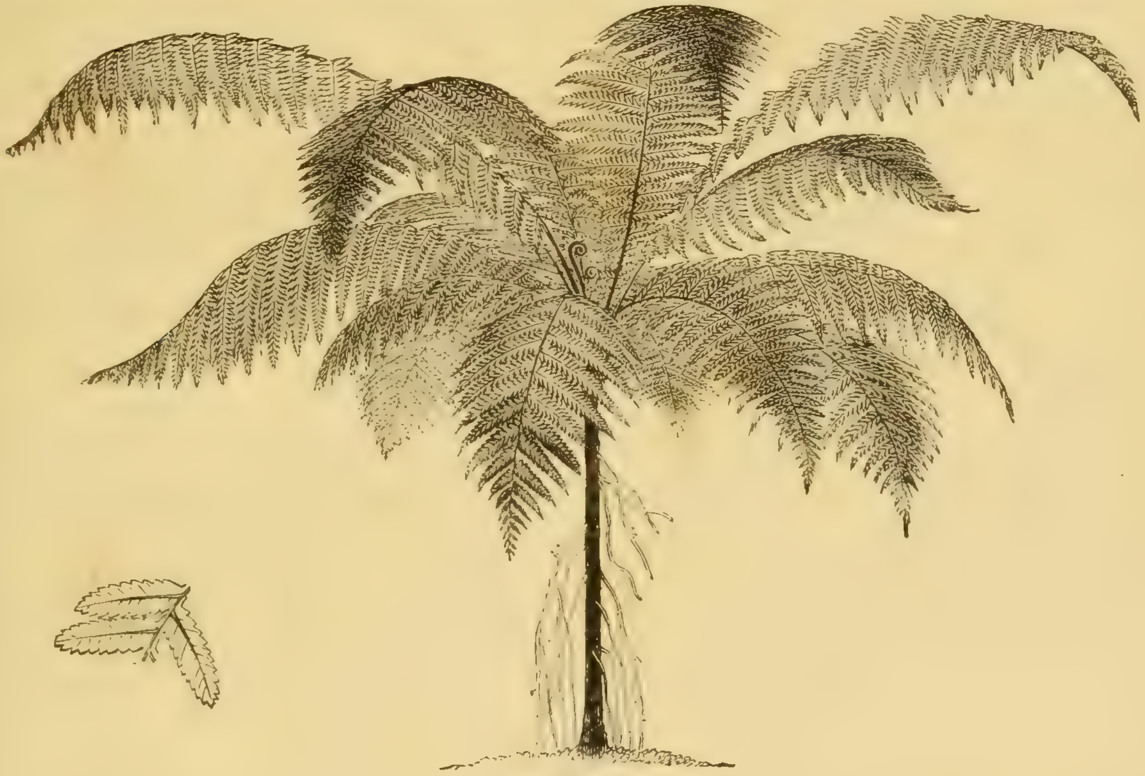
Planting in Spring.—Having just purchased some property, I am anxious to plant it with shrubs and trees, and I am desirous of knowing whether it is too late in the season to put them in, or would it be safer to wait until next fall. Are there any particular sorts which would be safe to plant now?—F. H. [Evergreen trees and shrubs, conifers, &c., may be planted with perfect success in spring and early summer. Deciduous trees and shrubs are best planted in the fall, though they may be planted with safety in early spring.]

The Canadian Elder.—Mr. Williams, of Ormskirk, has written to you in praise of the common Elder and its varieties. I fully endorse his praises, but I would add to them by recommending the Canadian Elder as one of the best autumn-flowering shrubs with which I am acquainted. I saw it in September last year at Kilmory, Argyllshire. The gardens there are celebrated for the luxuriance and variety of their flowering shrubs. But at that time of year the Canadian Elder was most conspicuous in the woods and shrubberies. It has large cymes of white and pink flowers, and, like all the family, will grow anywhere.—Henry N. Ellacombe, *Bitton Vicarage, Gloucestershire.*

THE INDOOR GARDEN.

TODEA WILKESIANA.

This is an exceedingly pretty tree Fern, and one which is quite distinct from all others in cultivation. In Australia tree Ferns are said to have trunks that often reach some 60 feet in height and 4 or 5 feet in circumference; and even in our English nurseries and private gardens we sometimes find giant specimens of tree Ferns, the trunks of which have been rooted out and imported like logs of wood. The subject of our illustration, however (for which we are indebted to Messrs. Veitch), acquires no such dimensions; on the contrary, its trunk attains only a height of some 2 feet, and its diameter a little more than an inch. Like other species belonging to the same genus, it is particularly partial to a close moist atmosphere. A minimum temperature of 45° in winter seems to suit it admirably, and even from a few degrees less it sustains no injury. The specimen of this plant now in the Royal Exotic Nurseries has a trunk nearly 13 inches in height, and a wide-spreading crown consisting of over a dozen large and fine fronds of last year's growth, and others in course of development. It is grown in a large glass case in a shady corner of the fernery, in a compost consisting of peat, chopped sphagnum, and silver sand, the pot being plunged in another containing sphagnum, so as to prevent too rapid fluctuations of temperature or moisture. The case is not kept close; on the contrary, one side of it is generally open.


Todea Wilkesiana.

THE BALSAM.

The Balsam may be said to be among the best of conservatory annuals. It is easily cultivated, it is amongst the gayest of the gay, and most accommodating in habit. It may be grown as a small, spindly pyramid, in a 4-inch pot, or it may be had in the form of a bush. As a vase plant indoors, it has few equals. Imagine a plant 3 or more feet in diameter at the base, about the same in height, perfectly pyramidal in shape, not stiff and formal, like an Azalea, nor overcrowded with bloom, but graceful in outline, with a profusion of soft-tinted flowers relieved by an abundance of delicate foliage, and you have the Balsam as it ought to be, and can be grown by anyone who will try. First of all secure seed from a good "strain," sow it in a 5-inch pot, using a finely sifted compost, consisting of leaf-mould, loam, and sand in equal parts; cover the seed about an eighth of an inch deep and plunge the pot in a Melon or Cucumber bed, or anywhere where the temperature is about 80°; water sparingly till the plants appear, when they must be well exposed to the light. As soon as they have made their second leaves prepare the required number of 4 or 5 inch pots by having them washed clean and crocked with clean crocks about an inch deep. Then prepare a rich and light compost of loam, leaf-mould, and well-rotted cowdung, or old decayed hotbed manure in equal parts. If the soil is cold, it must be warmed before using by leaving it in a warm house for some hours before potting; for the Balsam is very susceptible of injury from cold or damp, though it does not require a very high temperature to grow it successfully. When everything has been got in readiness, turn the seedlings out of the pot, single them out carefully, and pot them off, one in each pot, taking care not to press the soil too firmly so as to bruise the roots, or injure the soft herbaceous stems of the plants, but see that they are potted up to the seed leaf. When all have been potted, plunge them in some house or pit where they can have a bottom heat between 75° and 80°, and where they can be well exposed to the light and air; water thoroughly with tepid water, and shade for a few days until the roots get hold, when shading may be discontinued, and all air and light possible must be allowed consistent with a day temperature of from 75° to 80°, and bottom heat about the same. Under this treatment the plants will grow rapidly, and branch out freely on all sides; but care must be taken to water, carefully but without stint, when needful. As soon as the pots are fairly filled with roots, but before the balls get matted, the plants must get another shift into 9 and 10-inch pots, using the same soil and the same precautions as before. At this stage also the plants must be trained, for the first time, by pegging the lower branches down to the surface of the pot, or until they stand out at right angles to the main stem; and to these again must be tied, with soft matting, the second tier of branches. This will be about all that is practicable at this stage, and the plants must be restored to their former quarters, and treated as before.

Those who have limited conservatory accommodation seldom care to have plants more than 2 feet high, and as much or less in diameter; and this size can be secured in a 10-inch pot. When this is the case, the practice is to pick the flowers off up till the second potting, and afterwards to let the plants bloom; and eventually, when they are well grown and hardened a bit, to move them into the greenhouse or conservatory, when they will require abundant waterings with manure water. When plants of large size are desired, the plan of course is to shift on into larger pots—say, 12-inch or 14-inch—and to tie out the branches each time the plants are potted, or oftener if needful, and pick off the flower-buds until within two or three weeks of the time the plants are wanted to bloom. The Balsam will continue to flower for six weeks or two months, if it receives attention in watering and other liberal treatment. When a successional display is wanted, the custom is to sow every two months or so, until August or September. Moderate-sized, well-furnished plants can be got up in a very short time, as the Balsam is a rapid grower. As I have before stated, the plants must be plunged while growing. During summer a cold pit will suit them if there is a slight bottom heat; but, at any time, before removing the plants to the conservatory, the pots must be lifted up a few inches at a time, until they are quite out of the bed, so as to harden the roots a little. The plants will then not be checked by the transfer to the cool and airy temperature of the conservatory. J. S. W.

BASKET PLANTS.

SUSPENDED baskets, when well filled with suitable plants, may be said to be invaluable for conservatory decoration. Formerly the plants chiefly grown in such baskets consisted of Orchids, such as Stanhopeas, trailing Dendrobes, and similar plants; but now Ferns, Lycopods, Cacti, and succulent plants of various descriptions are employed for that purpose, and why the list should not be further extended in that direction I do not know. No better way of examining the intricate beauty of some of the smaller Melocacti could be devised, while a basket thoroughly well furnished with plants of Cereus flagelliformis, C. Mallisoni, and others of like habit, in full bloom, would be a sight worth seeing. The night-blooming Cereus would also be a grand subject for this kind of ornamentation. Again, for summer gaiety, what could be finer than a mixture of the brilliant orange, scarlet, purple, and silvery-white Mesembryanthemums? Of annuals, the Portulacas and Clintonias might be taken, and for winter and early spring the various kinds of Tropæolum, especially the varieties of T. Lobbii, and of the tuberous-rooted species, not forgetting our light and elegant favourites T. tricolorum, T. Jarratti, and the lovely blue T. azureum. If we want foliage plants, our stoves swarm with such fine-leaved plants as Gymnostachyums, Fittonias, Sonerilas, Panicum variegatum, and such climbing plants as Cissus discolor, Lindeni, and porphyrophyllus, the latter especially delighting in a position where, like the Ivy, it can root from every joint. Nothing can look more beautiful than these plants when brought between the light and the eye, Iresines and the Dracænas being specially beautiful in such a position. Perhaps, however, the finest examples of basket-gardening are the immense masses of the choicer kinds of Achimenes, as they may be seen in the Victoria house and large conservatory at Chatsworth. These baskets are very large, requiring, when filled with soil, four or five strong men to lift one, and each is stocked with hundreds of plants; so that when fully grown they form one dense mass of bloom, almost perfect spheres, from 4 feet to 6 feet in diameter, and decorated daily for several months in succession with thousands of flowers. It is singular that the original species, A. longiflora, its large-bloomed variety, and alba, patens, grandiflora, and Verschaffeltii succeed best, the modern hybrids not thriving at all well. The preparation for these baskets at Chatsworth is almost like the preparation for bedding out in an ordinary establishment. The caterpillar-like tubers may be seen by the peck, and after a time dozens of shallow boxes with the young plants growing up like small salading. Still, grand as Achimenes are in their season, there is another tribe of plants, which is still more effective. These are the Epiphyllums, which, when fully developed, form objects of great and novel beauty. Epiphyllums are particularly suited to the basket style of decoration, for, to realise their special beauty, the flowers must be seen upon a level with, if not above the eye; and the baskets can be raised or lowered, so as to bring out the bright tints of their richly-coloured flowers. A.

BROWNEAS.

THAT fine stove shrub, or rather small tree—Brownea macrophylla—is now producing magnificent flower-heads measuring nearly 3 feet in circumference, and of the most brilliant orange scarlet, in the hothouse of W. H. Crawford, Esq., in the vicinity of Cork, this being the third year since it commenced to flower for the first time, it is believed, in the United Kingdom, and for the third time in Europe. The magnificent heads of blossom are produced from the hard wood of the main stem a few inches from the ground, where a swelling first appears, then a crack in the bark, from which protrudes the bud on a short footstalk of about an inch to an inch and a half in length. The flowers commence to open usually in the morning, are at their best about the middle of the next day, and have fallen off before the next morning; so that each head may be said to remain in beauty for about two days. The plant in question is about 30 feet in height, and has a bare stem to the height of about 10 feet, when the branches commence. It produced seventeen of its beautiful flower-heads during the spring of 1872, and, curiously enough, was the only variety that bloomed in that year out of a collection consisting of no fewer than twelve species of this fine genus. These are named Brownea Leopoldi, antioquensis (only recently added to the collection), grandiflora, caliensis, princeps 20 feet high, erecta 40 feet high (these two last-named having never yet flowered), arriza, capitata, coccinea (the freest blooming of the whole family), grandiceps (which is finely figured in Van Houtte's "Flore des Serres," Vol. VI., tab. 581-2), and latifolia, almost as handsome a kind as macrophylla, which is now in bloom. The girth of the stem of macrophylla, close to the ground, is about 6 inches. There are four other varieties of Brownea known to collectors, but not in this collection. These are named B. leucantha, racemosa, cauliflora, and Rosa di Monte. Nearly the whole of this magnificent family are indigenous to the mountainous shores of Terra Firma, one of the hottest districts of South America. Two, viz., B. coccinea (figured in "Bot. Mag.," Vol. 69, tab. 3,964) and B. Rosa di Monte, are said to be also indigenous to the West Indies. Of these the first was introduced into England as far back as 1793, but from the amount of room they require, and the age to which they must attain before they flower, they are but little grown by amateurs. Mr. Crawford's gardener has succeeded in crossing several of the kinds that have flowered with him, one with the pollen of the other, and has got them to ripen seeds which are of immense size, resembling a very large flat bean, about two only being produced in each pod. These, on being sown, have germinated freely, and he has now an exceedingly nice healthy lot of young seedlings of from the age of a few weeks to several years, whose foliage, in many instances, shows plain indications of partaking of the nature of one or both parents, and from these, when they bloom, some most interesting results may be expected. W. E. G.

PROPAGATION OF ORCHIDS.

THE majority of Orchids are very readily multiplied; still there are some that can only be propagated at long intervals. The value of Orchids does not depend so much on the beauty of the plant or its flowers as it does on the small quantity imported, or the difficulty of its being multiplied in our collections. Dendrobiums are perhaps as easy to propagate as any other Orchids. The old flowering bulbs of D. nobile may be cut into lengths, the latter being inserted in a common cutting-pan, covering them with a bell-glass, and plunging them in bottom heat. So treated, they break freely. D. Devonianum, D. transparens, and many others, may be propagated in a similar manner; or the old bulbs may be twisted round the tops of the pots and pegged down among the sphagnum. It is a good plan to have a close case in the Orchid-house, the bottom being covered with a layer of living sphagnum. Then, as back bulbs are cut from the plants, they should be labelled and laid on the moss, which should be watered or syringed occasionally to keep it fresh and moist. Nearly all Orchids will break freely from the old bulbs in a close humid atmosphere, provided always that there are latent buds on the parts removed. Old back bulbs of Oncidiums, Odontoglossums, Zygopetalums, Miltonias, Maxillarias, and Lycastes may be placed in a cutting-pan, or laid on a layer of moss in a warm, moist situation, where a large proportion of them will root and break freely. Aerides, Vandas, and Saccolabiums can only be propagated by lateral breaks. These last are produced very freely by some strong imported plants that have accidentally lost their leading growth. The same remark applies to Camarotis—a beautiful, though neglected, old Orchid—and to the Angræcums. Thunia alba and T. Bensoniæ are very easily multiplied by cutting up the old pseudo-bulbs into pieces 3 to 4 inches long, and treating them as recommended for Dendrobiums. Phalænopsis often produce lateral breaks, and occasionally produce young plants on the flower-stems. P. Luddemanniana frequently does this, while Cypripediums, Masdevallias, Disas, and most other Orchids, are readily multiplied by division after the plants have attained to a good size.

Seedling Dendrobes.

Seedling Orchids are but rarely met with, although some very good things have been obtained from seed. Cypripediums, more especially C. Schlimmii, seed freely if fertilised as recommended, and the latter species generally comes true from seed. Disa grandiflora comes up from seed very freely, and some of the beautiful varieties into which it sports have doubtless originated in this manner. Orchids produce an immense quantity of their membranous, netted seeds, when properly fertilised, but I am inclined to think that but a very small proportion of good seed is borne by plants in this country; that is, seed capable of germination. Orchid seed when obtained should be sown immediately on some fresh living sphagnum in a moist situation, where there is no danger of its being disturbed for twelve months at least. Even after the seed does germinate, it takes the seedlings a long time to make flowering plants; still the raising of seedling Orchids is very interesting for those who have the leisure and inclination to devote to the subject.

Phajus grandifolius.

Phalænopsis Schilleriana.

Seedling Dendrobes and Cypripediums have been raised at the Fairfield Nurseries—the latter from imported seed; and Mr. Mitchell, gardener to Dr. Ainsworth, Lower Broughton, near Manchester, has also some very promising seedling Dendrobes. Our sketch shows seedling plants about three years old, the result of fertilising D. heterocarpum with the pollen of D. nobile.

Several hybrid Cattleyas, Lælias, and Cypripediums have been raised by Mr. Dominy, whom we have also to thank for Cypripedium Harrissianum and C. vexillarum. Calanthes are very easy to propagate, for if an old bulb has its top broken off it will often produce two or three young plants round the fracture. The delicate little Pleione humilis propagates itself very freely, producing numerous little bulbels on the apex of of its old decaying pseudo bulbs. These fall off and root freely into the living sphagnum on the pot-tops. The preceding methods are those generally adopted in the nursery trade, and are equally applicable to private establishments.

Our illustration of Phajus grandifolius shows a young plant produced adventitiously on the flower-stem, and also young plants on the flower-stem of Consul Schiller's Phalænopsis. This also illustrates a semi-circular raft on which Phalænopsids, Saccolabiums, &c., are successfully grown by Mr. Turner, Leicester. Grown in this way, with the roots exposed, is far more rational than to bury the aerial roots in a mass of cold, wet, and often rotten sphagnum, as is generally done when these plants are grown in pots. F. W. B.

THE GARDEN-CATALOGUE OF A.D. 1.

In the length of the garden-catalogue as it was in the year One, and as it exists in 1873, we should naturally expect some striking difference, and this not only in regard to familiar and fashionable flowers, but as to commonly cultivated esculents and favourite fruits. The immensity of the contrast between the first and last, it is impossible, however, to conceive without comparison. The ornamental part of our garden contents must needs be enormously greater, seeing that the floral treasures of every country in the world are now represented in England: it is when we look at the list of eatable things that surprise begins to grow; since at the period from which Anno Domini dates, the mightiest nation of antiquity made luxury and feasting one of the chief avocations of life, and appetites such as theirs could not be satisfied without plenty of tribute from trees and plants. Where, to-day, according to our seedsmen's lists, we have the choice of a hundred varieties, there is reason to believe that the Romans had no more than they could count upon their fingers; it is plain that they must have put what they did possess to consummate use, and that the want of an ampler selection was compensated by skill in cookery. The same is true of the variety of the fruits within reach at the time of the Cæsars, though in regard to these the lists of sorts were longer than those of esculent vegetables. Even equivalents for many things in constant use with ourselves were not possessed by the ancients, the Potato, for example, and the Cauliflower; and, among fruits, the Orange, the Pine-apple, and the Cocoa-nut; tea likewise, coffee and chocolate, sago and tapioca; and, though not exactly horticultural, still, like the renowned beverages, a botanical thing as to parentage, that incomparable and immortal leaf which supplies an "own fireside," to every man who fancies it, be he married or single, at home or abroad, Helen's Nepenthe and Paracelsus's elixir vitæ rolled into one—the leaf that supplies the good cigar. Fancy, had he but known it, the praises of Nicotiana that would have flowed from the pen of gentlemanly Horace!

The list of culinary vegetables esteemed by the ancients may accordingly be very soon run through, as with that of the cereals which formed the chief care of the husbandman. It is much the same too, whether we ask what the Hebrews ate in the time of Solomon, or the Egyptians when the Pharaohs reigned, or the classical Greeks, or the Romans under kings, consuls, and emperors. The cultivation of the original sorts began with civilization, and travelled westwards with the pioneers of human progress. In the Old Testament are mentioned Wheat, Barley, and Millet; Beans also, and Lentils (which last constituted a large proportion of the popular food in early times), Cucumbers, Gourds, Melons, and Onions. The monuments and tombs of primæval Egypt contain drawings that illustrate many of the same things, and even the processes of agriculture, with threshing and baking, &c.; while now and then even seeds are discovered. What was cultivated in Greece is known from the literature of that great country; and the additions made by the Romans we learn similarly from the Latin authors. The last-named people had the common Cabbage in its larger and grosser forms, Turnips and Carrots, Leeks, Peas, Chick-peas (the produce of the Cicer arietinum) which, like Beans and Lentils, had been extensively used by mankind from time immemorial), and Asparagus; this name including, however, other kinds of succulent shoots, just as in Bath, at the present day, the young flower-spikes of the Ornithogalum pyrenaicum are sold as "English Sparrowgrass." They also had various acetarious or salad plants, such as Parsley, Lettuces, Endive, and Sorrel; and a fair proportion of aromatic potherbs, such as Basil, Pennyroyal, Mint, Marjoram, Sage, and Savory; with plants that supply seeds suitable for condiments—Mustard, Anise, Cummin, Coriander, and the like. Capers, Radishes, and Alexanders (Smyrnium Olusatrum) likewise seem to have entered into their vegetable bill of fare; and in addition to these, several things which in England have never been employed, such as the rhizomes of the Arum Colocasia and the pungent seeds of the Nigella. Similarly, in the East, appear to have been eaten the rhizomes of some of the water Lilies, the pods of certain species of Hibiscus, the Almond-like seeds of the Nelumbium speciosum, and the bulbs of the Asphodel. The Asphodel bulbs are what old Homer refers to in the Odyssey, as the food of the departed, to whom it was supposed some sort of pabulum would still be important. Various other esculents were resorted to by the inhabitants of different countries, every nation of course finding out what was suitable for food in the products of its own soil, while colonists gradually conveyed the best of these to other lands. Among these odds and ends were various species of Chenopodiaceæ, anticipating our byegone use in England of the common mercury (Chenopodium Bonus-Henricus), and our modern employment of Spinach; the tubercles likewise that are formed upon the rhizomes of the Cyperus esculentus, which possess an agreeable and nutty flavour, and are to this day largely collected in Spain for the manufacture of orgeat, the principal supply being yielded by Valencia. The Garlic, by the way, so esteemed in ancient Egypt, would seem to have been that species of Allium we now call, from Ascalon, its original seat, the Shallot or Eschalot. In oriental countries it is the commonest of the genus, and no doubt is the bulb intended in the memorandum preserved by Herodotus, who says that the list of expenses incurred in the building of the pyramids included the enormous item of 1,600 talents expended in buying Garlic for the food of the workmen. The poorer classes among the Romans used as pulse the seeds of the Lupinus Thermis, an amusing allusion to which is made by Virgil, who calls the crop Tristes lupini—"melancholy lupines"; the epithet referring not to anything woe-begone in the aspect of the plant, for, like all other Lupines, it is cheerful enough in countenance, but to the dejected look of those who ate freely of the seeds, the bitterness of which has a tendency to draw down the corners of the mouth, as when a child is about to cry. That the word "tristis," in one of its senses, signifies simply bitter to the palate, is quite true, and Virgil himself elsewhere employs it in the literal sense; but the charm of an epithet in the hands of a great poet is, that while applicable as a prosaic one, it makes quicker and livelier appeal to the imagination, and this, no doubt, was Virgil's design. The Lupine in question is still a common article of food with the poorer classes in Sicily. To moderate the bitterness, the plan is now to soak the seeds in salt or sea-water for twenty-four hours, after which they are eaten without further preparation. Seeds of this Lupine have been found in the ancient Egyptian tombs, along with Chick-peas. In the East, we may add, and probably also in Southern Europe, Sesame, the Brassica oleifera, and other plants were cultivated for the sake of the oil obtained by expression from the seeds.

Most of the superior kinds of vegetables in use among the Romans, as well as the cereals, were almost certainly brought in the first instance from western Asia. The particular history of their first culture of course can never be known. Bulbous plants would excite attention before fleshy-rooted ones, since most of the latter owe their excellence to prolonged cultivation, and hence it is that some of the best of these fleshy-rooted vegetables are relatively modern. Think of the wild or indigenous form of the Parsnip or the Carrot as it grows by the waysides in many parts of England, and especially near the sea; how little inducement it seems to offer to the gardener, yet what admirable results have been achieved by patience and skill! These plants are at the same time illustrations,—examples of an almost universal capacity in the vegetable kingdom for improvement under the hand of man. "All our plants," it has been well said, "are capable, more or less, of indefinite inprovement. The result gained to-day is simply a prophecy of what may be attained to-morrow, and herein lies the true reward for labour." If progress in particular departments of culture appears to be slower than we may fancy it to have been aforetime, this comes of the object dealt with now occupying a higher level; the nearer we approach perfection, of course the slower must be the advance. Note likewise the grand assurance given by the consideration of this splendid principle of "improveability," in reference to the food of man throughout the ages to come! While we have a thousand reasons to be thankful for what was accomplished years ago, and as many more for pride in the achievements of to-day, we may cherish no less lively a sentiment of hope in regard to the future, and dread not for an instant the super-abundant populating of the earth foreboded by alarmists and calculators. Nature knows better than to create mouths in excess of food. The gardeners (taking the word in its largest and worthiest sense), with God's help, will act as her agents in preventing that. Though the botanists bestowed the names, it is to the gardeners we owe the conversion of things from the insipid and innutritious condition into one of excellence; and it will be the gardeners who, rightly apprehending the true law of nature, will show that her productiveness will never be outrun by that of mankind. The relation of plants to the needs of man has for its inmost principle the idea of benevolence. Nothing supernatural will ever be needed, and though local deficiencies may arise, and the balance seem disordered, it will never be from failure in the adaptedness of nature to all requirements, let her only be tended skilfully. The same facts show that the gardeners are trustees of the true conservative force of civilization, which constantly depends upon good and plentiful food, seeing that the improvements that have been effected by them are subject to disappearance, and require constant and vigilant industry to be rendered permanent. Cauliflowers and Potatoes are guaranteed only to intelligent industry; civilization, and first-class vegetables, Cereals included, go hand-in-hand, and stand and fall together. It must not be overlooked, while speaking of vegetables employed in the kitchen, either as substantial aliments or as conferring delicate relish, that the Romans were acquainted with many of the most precious and remarkable spices and other flavouring products ripened in oriental countries, ascribing many of them to Arabia—then, as still, a land of marvels and mysteries—and which were conveyed westward by the famous merchants who made their way from India by the Persian Gulf and the Euphrates, and thence *viâ* Damascus, or over the waves that carried Sinbad, and up the Red Sea. Pliny mentions, for example, cloves, mace, cinnamon, pepper, and ginger; also as officinal substances, cardamoms, catechu, storax, tragacanth, myrrh, mastic, labdanum, galbanum, opopanax, &c. Some of these last were simply Syrian in their origin, and some belong to times far more remote than Pliny's, the names occurring in the Old Testament; collectively they attest the immense extent of ancient commerce.

Leo Grindon.

A TROPICAL CANAL.

THE accompanying is an illustration of one of the many beautiful narrow creeks that abound along the great rivers of South America—a region in which vegetation attains the greatest possible luxuriance. In the deep alluvial soils in the great river basins, Palms, Arums, and other tropical types acquire wonderful dimensions, and the contrast of small-leaved and round-headed trees with the Palms and similar stately examples of vegetation has a beautiful effect, which is, moreover, enhanced by the drooping shoots of the giant climbers which hang from the higher trees. The water itself in many cases teems with aquatic plants of the most beautiful kinds; our best tender Water Lily even—the Victoria regia—was found in one of the tranquil tributaries of the Amazon.

A Tropical Canal.

GARDENING AS A RECREATION.

I WOULD recommend every man in the autumn of his life to take to gardening, if he has not already experienced its pleasures. Of all occupations in the world it is the one which best combines repose and activity. It is rest-in-work or work in rest. It is not idleness; it is not stagnation—and yet it is perfect quietude. Like all things mortal, it has its failures and its disappointments, and there are some things hard to understand. But it is never without its rewards. And, perhaps, if there were nothing but successful cultivation, the aggregate enjoyment would be less. It is better for the occasional shadows that come over the scene. The discipline, too, is most salutary. It tries one's patience and it tries one's faith. And even in the worst of seasons there is far more to reward and encourage than to dishearten and to disappoint. There is no day of the year without something to afford tranquil pleasure to the cultivator of flowers, something on which the mind may rest (using the word in its double sense) with profit and delight. If there is no new surprise, no fresh discovery for you, there is always something to be done. "The garden is a constant source of amusement to us both," wrote Dr. Arnold in one of his delightful letters—he was writing of himself and wife; "there are always some little alterations to be made, some few spots where an additional shrub or two would be ornamental, something coming into blossom; so that I can always delight to go round and see how things are going on." In the spring and summer there is some pleasure-giving change visible every morning, something to fulfil and something to excite expectation. And even in the winter flower-culture has its delights. If you have a greenhouse or conservatory, no matter how small, you have an indoor garden, in which you may watch some changes and enjoy the same delights. And if you have not, you may still do something to preserve your nurslings during the rigours of the hybernal season. Indeed, there are few states of life in which floriculture is not available enjoyment. To rich and to poor it is a blessing equally accessible. "As gardening," it was observed by Sir William Temple, who has had a new lease of life in one of the best of Macaulay's "Essays," "has been the inclination of kings and the choice of philosophers, so it has been the common favourite of public and private men, a pleasure of the greatest, and the care of the meanest; and, indeed, an employment and a possession for which no man is too high or too low."—*Cornhill Magazine.*

The American Aspen.—This is abundant in the region east of the Cascade Mountains and Sierra Nevada, forming a marked feature of the vegetation of the slopes of these mountains where the forests of the higher lands border the Sage plains of the central desert. Here it is seen in long lines of trees of small size, marking the course of the many mountain streams which are in summer absorbed by the arid surfaces of the plains soon after leaving the mountain sides. Dr. Newberry says:—For a time we were often deceived by the Poplars and Willows, regarding them as indications of the presence of water, but we soon learned that they were only a sign that water was to be found in their vicinity at some time during the year.

WHEN I could not obtain large pleasures, I put together as many small ones as possible. Small pleasures, depend upon it, lie about as thick as Daisies; and for that very reason are neglected, trodden under foot, instead of being worn in our button-holes. We cannot afford to buy Roses at Christmas, or Camellias at any time; and so we couple Butter-cups with vulgarity; and things that grow in the hedgeside we let wither where they grow, for no other reason than that the king's highway is not a royal garden.—*Douglas Jerrold.*

SOILS, MANURES, &c.

VALUE AND APPLICATION OF MANURES.

It is a much easier task to define the constituent elements of manures than it is to lay down any rule for their application. Science can do the one, but to apply manures beneficially, it is requisite that we should, in addition to scientific knowledge, possess an experimental acquaintance with soils of different kinds. In my first article upon the renovation of a garden (see p. 119), I had occasion to speak of farm-yard manure. I shall now, therefore, briefly notice some of the other kinds of manures that are used in the garden.

SOOT.

The fertilising properties of soot are not so well known as they ought to be; were its value more appreciated every handful of it would be treasured up for garden use, instead of being allowed to be carried off by the chimney-sweep. If inferior to guano, it has this advantage, that it can hardly be misapplied. Owing to the nature of its constituent parts it will be found a suitable manure for growing crops of all kinds. Immediately after thinning my Onions and Carrots, which are sown in rows, I place between each drill a good thick layer of soot, and after it has absorbed from the soil moisture enough to thoroughly damp it, with a narrow steel fork I loosen the soil between each row, always taking care to thrust the fork well down in the operation; by this means the soil may be gently stirred without displacing the young plants, thus leaving it open and ready for the next process, namely, a good soaking of water either by hose or other means. This settles the earth around the newly thinned seedlings, washes down through the open soil nearly every particle of soot in a few days, and promotes rapid and luxuriant growth. Upon the appearance of grub amongst my Carrots I repeat this process a second time; indeed, soot may be applied in a similar way to any growing crop with advantage. For twenty years I have annually covered my Peach borders under glass with a coating of it half an inch thick. After stirring the soot with a fork as just described, I then literally inundate the house with water. This is done in autumn about the fall of the leaf or directly after the fruit is all gathered. After the water has subsided and the house become sufficiently dry, a little fresh soil is spread over the whole; this makes all sightly and removes the sooty smell in a few days. The effect of this application on the exhausted trees is soon apparent; the new fruit-buds become plump and round, the young wood in the meantime becoming firm and the skin assuming a healthy brown tint.

GUANO.

This may be used in the same way as soot, but in less quantities. Upon the whole, however, guano is not a profitable manure when applied to a well-cultivated garden, its strong stimulating qualities having a tendency to excite vegetables to overgrowth. I have more than once seen Peas stimulated by it, bidding fair to rival Jack's celebrated Bean-stalk in height. Phospho-guano is, however, a safe and beneficial stimulant for pot plants when in a growing state. Instead of applying it in a liquid state, I sprinkle a small quantity upon the surface of the soil in each pot directly after a heavy watering has been given, and in about an hour after that I go over all the pots a second time with the watering pot, giving to each as much water as will stand upon the surface, leaving it to filter through the pot at leisure. After this it will be found that all the finer particles will have been dissolved and absorbed in the soil, without any portion passing through the bottom of the pot. The silicious particles left on the surface gradually dissolve, and are carried into the soil by every fresh application of water to the plants. Let any of your readers try this manure in the way I have described, say upon Camellias, Azaleas, or Epacrises, just when they are about to make their new wood, and they will soon discover its effect in infusing health and vigour into their plants.

BONES.

These have long and deservedly been held in high esteem as a suitable manure for every kind of garden crop. The fertilising properties of bones were known to many old gardeners who knew little or nothing of scientific analyses; for they have been found buried whole below fruit trees in some of the oldest gardens in the country. Bones consist chiefly of phosphate and carbonate of lime, with other kindred elements, and they are also rich in ammonia, making them especially well adapted as a manure for permanent fruit borders. Being slow to decompose, they retain their fertilising qualities for years.

NIGHT-SOIL AND PIGEON-DUNG.

Every one in charge of a garden, be it great or small, will understand the necessity of keeping a watchful eye upon these two fertilisers. Though small in quantity, they will yield great results.

LIQUID MANURE.

The waste of this about many places is a thing to be deplored. Will neither facts nor figures convince people of its value and of the loss which they sustain in allowing it to escape? Mr. Hobday, writing upon this subject (see p. 148), truly observes that the apathy of those immediately concerned in the matter prevents the utilising of liquid manure as a fertiliser; for about gentlemen's establishments this can only be properly done with the concurrence of some one in authority. Any one about to adopt measures for utilising the liquid that flows from either kitchens, stables, or cow-houses, I would advise that only one tank be not made for its reception, but tanks large enough to hold several tons. My impression is that the best means of utilising such liquids as flow from kitchens, water-closets, and wash-houses, is to make a large tank, the bottom of which should be laid with perforated tiles or flags; over that a layer of charcoal and fine washed gravel should be placed to the depth of 18 inches; through this tank all liquid from the common sewer should pass, leaving behind a deposit of solid matter that would be rich in fertilizing properties. Liquid from the stable and farm-yard can only be applied to the garden during the spring and summer months, but it may be made available at all seasons if combined with solid matter, *i.e.*, if a tank or tanks similar to those just described (with the exception of the filtering bed), were filled with dry earth of a heavy texture. A tank for this purpose, too, can be made for little or no expense: take a few loads of clay and a load of fine soil, thoroughly well worked together to the consistency of soft putty. After digging out the tank, and the bottom being laid, a course of bricks or stone should be laid upon it all round, about 10 inches from the side, thus leaving an empty space between the bricks and solid earth to be filled in with puddled clay; in this way the sides may be built up until the whole is finished, making a tank that will serve its purpose for a generation if kept moist and free from roots of trees. Soft water tanks may be made in this way of any size.

WOOLLEN REFUSE OR SHODDY.

I have used this extensively in the preparation of a new garden, and for Vine borders which I had under my care for sixteen years after its first application to the soil, and during that time I used it less or more, mixed up with farm-yard manure, for various purposes; and as far as my experience of it goes, I had every reason to be satisfied with the result. I would recommend any one preparing new Vine borders to lay a thick coating of this material over the rubble in the bottom of them (if their borders are prepared in this way); it prevents the loose earth from filling up the crevices, and acts as a sort of sponge when the borders are watered, at the same time preventing all minute particles from passing away with the water. Some of our agricultural chemists have placed woollen refuse very high in the scale of manures; if we take into consideration the different materials that compose it, they do not over-estimate its properties. Wool and vegetable fibre, saturated with the best animal oil, constitute its principal parts; indeed the pressing of oil out of woollen waste has become quite a branch of business in the West Riding of Yorkshire and elsewhere. Woollen refuse is slow in decomposing, and for this reason some doubt its fertilising properties. In Italy long before this material came to be noticed in this country, woollen rags were used in the renovation of exhausted Orange and Lemon trees; a circular trench in some cases was dug round the trees at a little distance from the stem, and filled in with rags mixed with earth, and firmly pressed down.

WOOLLEN REFUSE AS A FERMENTING MATERIAL.

No material with which I am acquainted can in any sense be compared with this as a fermenting material; when laid together in any quantity spontaneous combustion often takes place in it. When I first began to use it as a heating material upon my early Vine borders, I was taught a lesson that I shall not soon forget; people talk of setting the Thames on fire, but I succeeded in setting a little volcano in operation in my kitchen garden. After all this, however, I used it for the purpose of heating my Vine borders for many years; besides its heating property, owing to its oily nature, it prevents wet from passing through it to the soil beneath; and from what I have seen of it, I am surprised that the material is not more appreciated by gardeners, both as a fertiliser and as a warming material, than it is.

J. T.

THE KITCHEN GARDEN.

THE VARIETIES OF THE GARDEN PEA.

II.—MARROW PEAS.

Ripe seed white, large, smooth, uneven, compressed, irregular, or egg-shaped. Skin thick. Foliage blotched.

Paradise Marrow (*Champion of Paris; Excelsior Marrow; Knight's Excelsior; Stuart's Paradise*).—This was introduced in 1851, and in my published description at the time, I remarked—"This is a novelty which fully maintains the high character with which it was brought out. It is as yet very little known, having appeared at a time when the public were somewhat awakened to the necessity of caution with which new varieties ought to be received. As regards this, however, there need not be the slightest misgiving, as I have found it to be one of those which must ultimately become one of the standard sorts if preserved in its present true character. The pod is of very large size, remarkably well filled with a deliciously flavoured Marrow Pea, and is fit to be gathered as soon, or at most within a day of the Ringwood Marrow. With such properties, therefore, everyone will allow it is a variety well worthy of general cultivation. The plant is of a strong and vigorous habit of growth, with a stem from 5 to 6 feet high, which is branching towards the top. The pods are generally single, but frequently in pairs, about 4 inches long, nearly three-quarters of an inch wide, remarkably well and closely filled with from seven to nine large Peas, and when they begin to ripen they are thick-backed, succulent, and fleshy. The ripe seed is white, round, and smooth. This does its work very quickly, at least much more so than some others; for although it came into bloom five days later than the Ringwood, it was not, even at the utmost, more than two days behind it in podding.

Dixon's Early Dwarf Paragon.—In its habit of growth this resembles Bishop's Early Dwarf. The plant is from 2 to 2½ feet high, with a robust branching stem, which bears from sixteen to eighteen pods, generally in pairs. They are of a fine deep green colour, but do not fill well, containing from five to six medium-sized Peas. Ripe seed large, white, flattened, and indented. It comes into use at the same time as Paradise Marrow and Bishop's Long-podded.

Harrison's Perfection.—Plant with a robust habit of growth, having a thick succulent stem, 3 to 3½ feet high, and large dark green foliage. The pods are produced in pairs from every joint, averaging sixteen or eighteen on a plant, but they are very irregularly and badly filled, and contain only from four to six Peas. The Peas are large and thick-skinned. Ripe seed white, medium-sized, and somewhat Lentil-shaped. When this was first introduced it was considered a great acquisition as being an early dwarf Marrow Pea, and as such it would have deserved all that was said in its favour, provided it had not the very objectionable property of filling irregularly. The pods early assume the appearance of being ready for use, but when opened are found to contain half-grown Peas, four to six of which only come to maturity. It ripens at the same time as Prizetaker and Paradise Marrow, and is some days later than Advancer, which has the same habit, is far more productive, and has the additional advantage of being a sweet wrinkled Pea.

Laxton's Prolific Long Pod (*Laxton's Prolific Selected*).—It is to be noted than there are two varieties of Peas in cultivation under this name; one has the ripe seed white, and the other is mixed white and olive. The former, with white seed, is the true, and the latter is merely an inferior stock of Prizetaker Green Marrow. The true plant is of a robust and vigorous habit of growth, and with large pale-blotched foliage. The stem is from 5 to 7 feet high, producing from twelve to fourteen pods, which are in pairs. The pods are very large, of a pale green colour, broad, much curved, and pointed, and containing from seven to nine medium-sized Peas. Ripe seed white indented. The seed was sown on the 23rd of February. The first, flowers appeared on the 1st of June, and the plants were in full flower on the 5th. The slats appeared on the 11th of June, and the crop was fit to gather on the 25th—that is, within a day of Paradise Marrow.

Thurston's Reliance (*Reliance Marrow.*)—The plant is a strong and very robust grower, always with a simple stem, which is 6 to 7 feet high. At 3 feet from the ground the pods begin to be produced, and are regularly placed at every subsequent joint, even to the extremity of the plant, numbering in all from ten to twelve on each. The pods are generally single, but sometimes in pairs, from 3½ to 4¼ inches long, and three-quarters of an inch broad. They are very broad and flat, which shape they retain even when quite filled. The under edge is very much of a scimitar shape, and the upper is slightly curved and tapering gradually to the point. They are of a deep bright green colour, and the surface quite smooth, containing from seven to eight Peas in each, which are large, nine-twentieths of an inch long, seven-twentieths broad, and the same in thickness. The ripe seed is white. This is a very distinct and very useful Pea, an abundant bearer, and the pods are of a fine deep bright green colour, which is a recommendation to it when grown for market. It comes in at the same time as the Auvergne, but it is of a more tender constitution.

Queen of Dwarfs.—A very dwarf-growing variety, not more than 6 to 9 inches high. The stem is thick, succulent, and sometimes branching, and the foliage of a dark blue-green colour. Each plant produces about four or six pods, which are of a curious elliptic shape, and rarely contain more than three or four large Peas. Ripe seed white, medium-sized, egg-shaped, unevenly compressed. This is a very worthless variety, and unworthy of cultivation for any purpose whatever. The plant is so remarkably tender, that even in favourable seasons it does not develope nor fill its pods freely. In summers like the last it is chilled with cold, and in those that are warmer or more genial it is almost invariably attacked with green fly.

November Prolific.—The plant is 2 feet high, with dark green foliage. The stem is rather robust, generally simple, but occasionally branched, and bears from twelve to sixteen pods. The pods are generally in pairs, rather short, and contain from four to six Peas in each. Ripe seed white, medium-sized, smooth, and compressed. It is two to three days earlier than Victoria Marrow. This somewhat resembles in growth the Royal Dwarf, but is very inferior to that variety, and, in fact, is not worth growing for any purpose.

Egg.—This is a very old variety, and long known by the name of Black-eyed Susan, from the seed having a black hilum or eye. The plant is of a strong and robust branching habit of growth, and from 7 to 8 feet high. It produces about eighteen pods, which are almost always in pairs, and these contain about seven good-sized Peas, which are large and oval, like a horse-bean. Ripe seed white, large, egg-shaped, and with a black hilum. This, though an abundant bearer, is quite a worthless variety, and it would be difficult to say for what object it is cultivated. The Peas have a very thick skin, and a coarse Bean-like flavour, and when cooked are generally of a dusky brown colour.

Victoria Marrow (*Waterloo Marrow; Giant Marrow; Tall Marrow; Wellington; Royal Victoria; Gibbs' Defiance*).—The plant is of a strong and vigorous habit of growth, having a simple stem from 6 to 7 feet high. The pods are produced near the top of the stem, sometimes singly, sometimes in pairs, in about equal proportion, and contain from five to seven very large Peas. Ripe seed white, large, uneven, and roundish.

Princess Royal.—The variety under this name grown in the Chiswick Garden this season proved to be as early as Paradise Marrow and Laxton's Prolific Long-pod. The true Princess Royal, raised by Dr. Maclean, and grown in the trial of 1860, was as late as Tall Green Mammoth, and seven days later than Victoria Marrow. In the true variety the plant is 3 feet high, a strong and vigorous grower, with dark green foliage. The stem is generally simple, but occasionally branched, bearing from ten to twelve pods, which are usually in pairs. The pods are large, and have an attractive appearance, but they fill slowly and indifferently—so much so that when opened they average only from three to six large Peas in each. Ripe seed large, round, uneven, and white.

Danecroft Prolific.—The plant very much resembles the Victoria Branching in habit. It is 3 feet high, robust, and frequently branching, and produces from twelve to sixteen pods, which contain from seven to eight Peas of good size. This is an abundant bearer, and four or five days later than Victoria Branching, to which it is not superior.

III. GREEN MARROWS.

Ripe seed of a mixed white and olive colour, either small, round, and pitted, or large, irregular, and uneven. Foliage dark green and blotched. Pods dark, bluish green, very glaucous.

William I.—This is one of Mr. Laxton's new cross-bred varieties, and is the earliest of all the Green Marrow Peas. It is nine days earlier than Prizetaker, and ten days earlier than Laxton's Supreme. The plant is from 4½ to 5 feet high, somewhat slender in growth, being in this respect similar to the Early Frame class. Stem simple, producing from fourteen to sixteen pods, generally single, but frequently in pairs. The pods are long and very handsome, of a dark bluish green colour, covered with a thick bloom like Prizetaker, and contain from seven to eight fair-sized Peas, also of a dark green colour. The ripe seed is small, round, indented, of a mixed white and olive colour. This received a first-class certificate from the Royal Horticultural Society.

Unique.—This is another of Mr. Laxton's cross-breds, which is five days later than William I. It was obtained by crossing Laxton's Prolific and Little Gem. The plant is of the same habit as Tom Thumb and Little Gem, and is from 1 to 1½ foot high. The stem is moderately robust, branching, and producing eight to ten pods, which are usually in pairs. The pods are rather long, broad, slightly curved and pointed like those of the Blue Scimitar, and of a fine dark green colour, each containing from six to eight bright green Peas. Ripe seed is parti-coloured. A fine long-podded and prolific early dwarf Pea, to which a first-class certificate was awarded by the Royal Horticultural Society.

Prizetaker (*Bellamy's Early Green Marrow: Prizetaker Green Marrow; Rising Sun; Leicester Defiance.*)—The original name of Bellamy's Early Green Marrow has now been entirely superseded by that of Prizetaker. In 1860, when the latter name was new, and the two Peas were grown side by side, I could not see any difference between the two. The old Early Green Marrow, from which this is a selection, is an inferior variety, and now not worth growing. Prizetaker is 4½ feet to 5 feet high, of a vigorous habit of growth. The stem is sometimes simple and sometimes branched, and produces from twelve to eighteen pods. The pods are in pairs, very rarely single, and of a deep bluish-green colour, covered with a thick and distinct bloom; they contain six to seven large Peas in each, which are of a dark bluish-green. The ripe seed is small, round, and of a mixed white and green colour. It is as early as Ringwood and Paradise Marrow.

Laxton's Supreme.—This has much the same character as Prizetaker, than which it is one day later in coming into use, and the pods and foliage are of a paler green. The pods are very large, long, broad, and are not so well filled as they appear to be, yet they contain from seven to nine large Peas. The ripe seed is olive green, and indented. This is a large and very handsome Pea.

Laxton's Superlative.—This is the largest-podded Pea in cultivation. It was raised by Mr. Laxton from crossing Ne Plus Ultra and a hybrid of Supreme. The plant is very robust in its habit of growth. The stem, which is strong, succulent, and not branching, is from 7 to 8 feet high, with large, broad, pale foliage, producing from fourteen to fifteen pods, generally in pairs. The pods are very large, being 7 inches long, broad, and somewhat irregular in their outline, much curved and pointed, and of a pale green colour; they contain from seven to nine large pale green Peas. Ripe seed flattish, parti-coloured. This large and handsomely-podded Pea does not fill very well, many of the pods being only half full. It received a first-class certificate from the Royal Horticultural Society.

Matchless Marrow (*Milford Marrow; Stradsett Marrow*).—Plant 5 feet to 6 feet high, of strong and robust habit of growth. The stem is always simple, and bears from twelve to sixteen pods. The pods are generally in pairs, rarely single, and contain from six to seven very large Peas. The ripe seed is large, uneven, variously and irregularly shaped, and of a white and olive colour mixed. Sown February 19th, bloomed June 13th, slatted June 28th, ready for use July 15th. This is a great bearer, and produces large, plump, well-filled pods, which come into use ten days after Prizetaker, but it is a tender variety.

Garbutt's Amazon (*Denyer's Early Prolific Green Marrow*).—Plant a strong robust grower, 5 feet to 6 feet high, having a simple stem, which produces not more than six pods. The pods are either single or in pairs, and contain six large Peas in each. Ripe seed large white and olive mixed, uneven, variously and irregularly shaped. This is very much in the way of Matchless Marrow, but comes into use five or six days later. It is also much less productive, and the pods, which are few, fill indifferently, so that it is not a desirable variety. Is it not the old Tall Green Marrow?

Sutton's Berkshire Hero.—This is a much taller and stronger grower than the preceding, and five to six days later in all its stages. The plant is seven feet high, and produces eight or ten large pods, which contain from six to seven very large Peas. The ripe seed is larger than that of the preceding and of Matchless Marrow, uneven, variously and irregularly shaped, and of white and olive colour mixed. This is a very late Green Marrow, being nineteen days later than Prizetaker.

Mossy podded (*Grotto Pea; Oyster Pea; Blankney Marrow; Australian*).—The plant of this variety is 6 to 7 feet high, of a strong and vigorous habit of growth, with deep green foliage, which remains green for a lengthened period. Stem generally simple, producing from twenty to twenty-four pods, mostly in pairs. The pods are long, slightly curved, full, and rounded, of a bright green colour, and frequently covered, especially where shaded, with a rough granular excrescence, whence the name of "Mossy Podded." They contain from seven to eight medium-sized deep green Peas closely packed, and which are inferior in flavour. This is a very late Pea. Sown on the 23rd of February this year it bloomed on the 20th of June. Slats appeared on the 24th, and the pods were ready to gather on the 3rd of July.

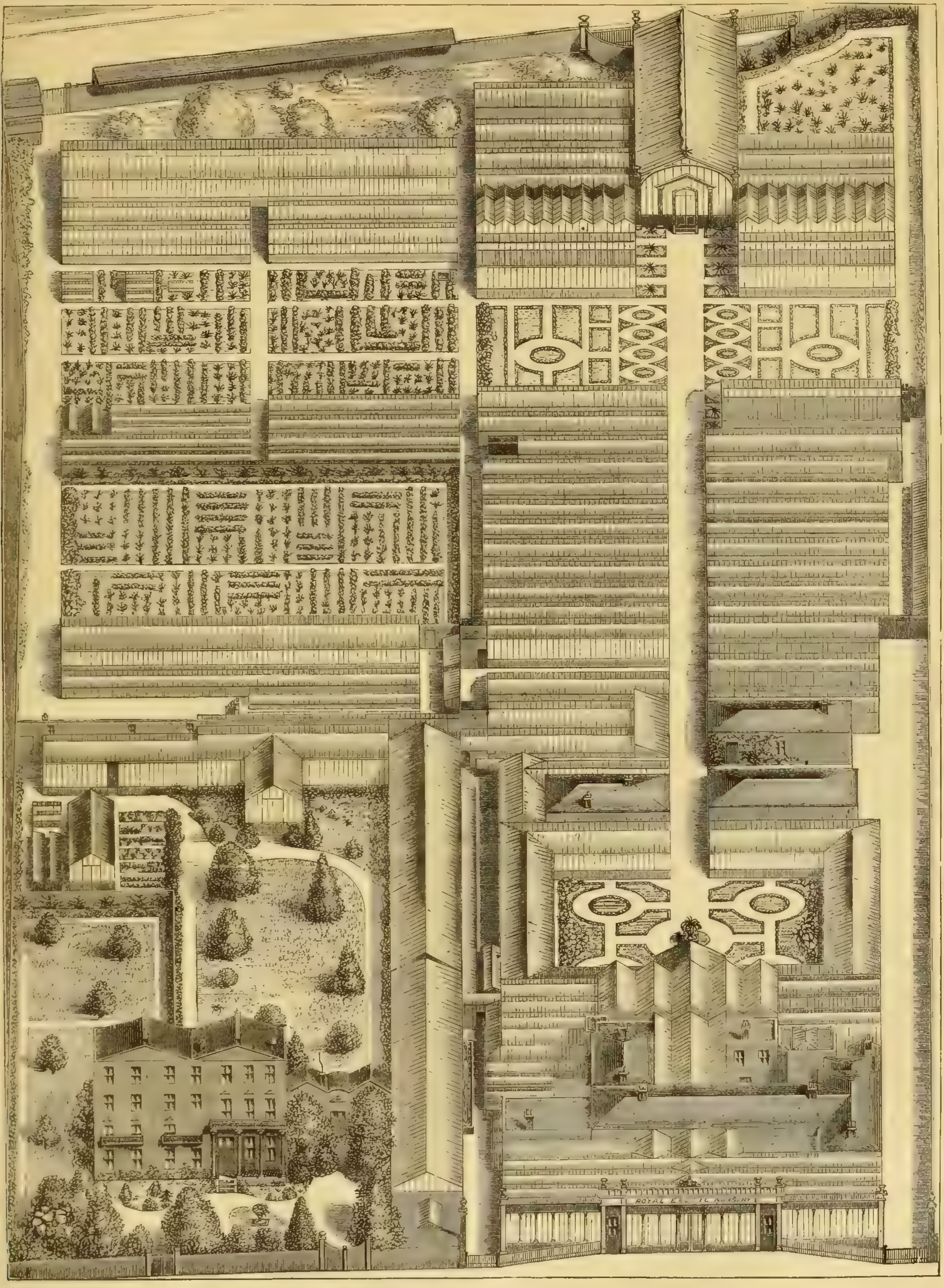
(To be continued.)

MESSRS. VEITCH'S NURSERY, CHELSEA.

There is probably not in existence a more famous gardening establishment than that of the Royal Exotic Nursery at Chelsea, of which we this week give a bird's-eye view, taken for The Garden a few weeks ago. The establishment is so compactly and well arranged for its purpose that a view, which serves also some of the aims of a plan, may be useful and interesting.

This establishment, so interesting at all seasons, is scarcely less so now than in the height of summer, when flowers are plentiful. The entrance from the King's Road at once places us in a cool conservatory, which contains Palms, Araucarias, Dracænas, Tree Ferns, &c., suitable for conservatory and greenhouse decoration. To the left is the seed department, and to the right the offices, which have recently been newly built and much enlarged. Proceeding down the conservatory corridor, which is filled with beautiful plants of various kinds, we pass a museum on the left richly stored with curiosities sent home from foreign countries by different collectors belonging to the firm, but chiefly with contributions from Japan and the South Sea Islands, made by the late Mr. John Veitch. The corridor itself terminates in a large house especially devoted to Tree Ferns of various heights, and consisting of the best greenhouse kinds, such as Dicksonia antarctica, Cyathea dealbata, &c. There are also some specimens of the curious Todea arborea. On leaving the Tree Fern-house we come to what is called "The Square," from which the eye is at once carried to the large Camellia-house at the Fulham Road entrance to the nursery. Each side of the square is ornamented with rockwork thickly planted with herbaceous plants; also strong Ivy, Clematis, &c., the beds between the rockwork and walk being decorated in summer with sub-tropical and other plants. The square itself is surrounded by eight houses, space being only left for the main walk between them. Two of these houses are devoted to fine collections of Palms, three to fine foliage hothouse plants, such as Marantas, Anthurium, Crotons (including all the best novelties belonging to that fine genus) Cyanophyllums, &c.; one to Nepenthes, which grow with a luxuriance only equalled by that in their native habitats; one to Caladiums and similar plants; and one to greenhouse Araucarias, such as Rulei and the Norfolk Island Pine, of which there is a fine stock of extremely handsome plants struck from cuttings.

On leaving the square by the Araucaria-house we arrive at the rock Fernery, a charming spot richly ornamented with Ferns, but not heated in any way except by being placed between an Orchid-house on the one side and a warm Fern-house on the other. In this rock Fernery, with simply a glass roof protection, often penetrated by frost, many greenhouse Ferns, such as Woodwardia radicans, Dicksonia antarctica, Lomarias, and Adiantums thrive admirably; and amongst evergreen hardy Ferns which succeed here may be particularised Lomaria chilensis, Lastrea Standishii, Lastrea opaca, and others. Many flowering plants, such as Winter Aconite, Snowdrops, Lily of the Valley, and Solomon's Seal are also interspersed amongst the Ferns; even variegated Begonias do well in the



BIRD'S-EYE VIEW OF MESSRS. VEITCH'S NURSERY, KING'S ROAD, CHELSEA.

same temperature, becoming dormant in winter, but producing very fine leaves during the summer months. Passing to the warm Fern-house we notice good specimens of Davallia Mooreana, Platycerum grande, Adiantum Farleyense, and others; also various sorts of Trichomanes, Leptopteris superba, and similar useful species. From this house we pass to the greenhouse Ferns, where there are Gleichenias, fine masses of the Killarney Fern, and Trichomanes requiring greenhouse treatment, a beautiful specimen of the Todea Wilkesiana, and many others, together with a good stock of young plants of the more popular kinds. Contiguous to the Ferneries is the Aloe-house, which contains many fine kinds of Agaves, and also beautiful specimens of Phormium tenax variegatum, Colensoi, and others.

Retracing our steps through the Fern-houses and rock Fernery we come to the Orchids, of which there are no fewer than fourteen houses, in which these ever charming plants are divided into two collections; one containing the larger quantity, and at which we first arrive, being called the business collection, the other being a select collection made by the late Mr. Veitch, and which is still kept up. The first house reached on leaving the Fernery is one furnished with Cattleyas, Cœlogyne cristata, and plants requiring similar treatment; next we come to the warm Cattleya-house, and then to the Dendrobium-house, the Vanda-house, followed by the house devoted to East Indian Orchids and the Cypripedium-house. In all cases the centre stage is devoted to the larger specimens, the young stock being on the side benches.

Turning to the left, after leaving the Cypripedium-house, we pass through three compartments devoted to cool Orchids, such as Odontoglossums, Lycastes, Anguloas, and here terminates what is termed the business collection. We then pass through to the collection formed by the late Mr. Veitch. We enter by a north portico, where, without any heat at all, Lælia autumnalis, Barkerias, and similar beautiful Orchids, seem to thrive admirably. We then enter the Odontoglossum-house, where a fine collection, including the rare O. Andersonianum, is just now in perfection. Next we arrive at the Vanda-house, in which are fine specimens of various East Indian Orchids, including the rare Vanda insignis; also Aerides quinquevulnerum, in very fine condition; Aerides Larpentæ, Phalænopsids and others. On the front stage, Cypripediums luxuriate. From thence we pass into the Lycaste-house, in which there is a fine collection of that popular class of Orchids, and where we also noticed the beautiful Dendrobiums Wardianum, Bensoniæ, and Falconeri, all in fine condition, together with Vanda cœrulea, Oncidium Rogersii, the new Odontoglossum vexillarum, and other rare kinds. The Cattleya-house, at which we next arrive, contains a nice collection of that showy class of Orchids, and there is also another —formerly an East Indian house—now filled with a miscellaneous collection of plants, above which Orchids are suspended from the roof. Six more smaller houses, filled with Odontoglossums, Cypripediums, Masdevallias, Phalænopsis, and other popular genera, complete the number of houses devoted to Orchids. Retracing our steps to the Cypripedium house we enter a long narrow house devoted during the summer to flowering Orchids and other choice plants, and filled at present with Dracæna terminalis and similar plants remarkable for the beauty of their foliage. This house leads into another devoted to the flowering plants more generally used for decorative purposes, and at present gay with Hyacinths, Tulips, and other Dutch bulbs. Through the whole of the houses hitherto enumerated, we have passed without once going out of doors since we entered at the King's Road, so complete is the general arrangement of the glass-houses in this fine establishment. We now, however, return to the central walk and find ourselves in close proximity to the propagating department, to which four houses are specially devoted. Proceeding up the walk in question, we come to the stove for flowering plants, gay at present with Poinsettias, Aphelandra Roezlii, and other winter-flowering plants; then we arrive at a high lean-to house, devoted to foliage plants suitable for room decoration; and beyond this is a house devoted to greenhouse Rhododendrons and similar plants. Opposite these are two greenhouses, furnished with specimen and half specimen flowering plants, and then on each side of the main walk are arranged a series of most useful houses, built low, and thus permitting the plants to be grown close to the glass, These houses contain the general collection of young greenhouse plants, also Azaleas, Epacris, flowering Rhododendrons, Begonias, stove and greenhouse climbers, Amaryllises, and plants of a similar description. Beyond these again come on the left-hand side two houses devoted to soft-wooded plants and florist flowers, one being now filled with Pelargoniums; the other with Bouvardias, Cyclamens in bloom, Primulas, and other plants of that sort. Opposite these is the aquarium, where formerly the Victoria regia, or Royal Water Lily, grew luxuriantly when scarcer than it is at present, but now filled with handsome specimens of Palms and various fine-foliaged plants. Behind and parallel to the two houses for florist flowers are two long houses and a series of pits, all devoted to the culture of this class of plants.

Leaving the aquarium, one comes to what is called the "Flower Garden," where are tried all new kinds of bedding plants; and here also is cultivated a large collection of Chrysanthemums, the more select kinds of herbaceous plants, &c. We then come to large glass houses, the two first of which are devoted to the large specimen Azaleas which have done such good service at our great metropolitan exhibitions; then follow two large houses filled with Camellias in tubs and pots, all of the best kinds and flowering nicely; the whole terminating with the large Camellia-house which forms the entrance to the nursery from the Fulham Road. This house is planted with about forty of the very best kinds of Camellias, and contains besides a fine lot of pot plants, standing between those planted out. The entrance to this house, which stands somewhat back from the public road, is decorated during the summer with standard and pyramidal Bay trees and plants of a similar description. On the left of the Camellia house are four large houses devoted to pot Vines, of which some 2,000 are annually grown here; and there are also here two houses devoted to the propagation of the soft-wooded plants.

It will be seen that we have only taken a cursory glance at the contents of the nursery as we have walked through it. We have not even noticed the eight or ten houses devoted to new plants. These, being less conspicuous than the others, are not seen in the ordinary way: they, however, contain a fine lot of new Crotons, Dracænas, &c.

We may, perhaps, be allowed to add just a word or two in reference to the heating apparatuses employed in this nursery. Many kinds of boilers have been tried in it, and the result is that all, as it becomes necessary, are being replaced by the "Trentham" boiler, which is considered to be both safe and economical—two great considerations in an establishment where, during the winter, as many as fourteen fires are kept burning.

THE LIBRARY.

HANDBOOK OF HARDY TREES, SHRUBS, AND HERBACEOUS PLANTS.*

This tolerably good-sized handbook of 687 pages is so exceedingly well got up as to reflect the highest credit on the eminent firm who have published it. It is based, as the title-page informs us, on the well-known "Manuel de L'Amateur des Jardins" of MM. Decaisne & Naudin, and is illustrated by the fine woodcuts of the first three volumes of that work. These of themselves are sufficient to embellish and enhance the appearance of any treatise on horticulture, and form no inconsiderable part of the merit of the volume before us. On looking through its pages, we find that it is divided into two parts, the first containing descriptions of a selection of species which the compiler considers most eligible for general cultivation. This will be found useful by those who do not possess an extensive knowledge of plants, or who cannot boast of a garden of more than moderate size. Such will find here an enumeration of good plants sufficient to supply all their present requirements. The advanced gardener, however, be he amateur or professional, will look in vain for an account of many of the finest introductions of the last ten years. In this respect we consider the book falls short of the wants of the present wide-spread and daily increasing knowledge of horticulture. The space occupied by descriptions of well-known British wild plants might have been more worthily devoted to some notice of such brilliant subjects as Dianthus alpinus, Lithospermum petræum, Gentiana Bavarica, Anemone blanda, Sparaxis pulcherrima, Saxifraga longifolia, and many others which are now in pretty general cultivation, but which, we are disappointed to find, have either been passed by altogether in the selection or merely alluded to by name. However, as a book of reference, within its limits, the descriptions given, although frequently of the briefest, may be consulted with advantage.

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* "Handbook of Hardy Trees, Shrubs, and Herbaceous Plants." Based on the French Work of Messrs. Decaisne & Naudin. By W. B. Hemsley. London: Longmans, Green, & Co. 1873.

The Perfoliate Honeysuckle (half natural size).

Evergreen, or Trumpet Honeysuckle (half natural size).

The second part (which from the proportion that it bears to the first part might have been more justly printed as an appendix) proposes to treat of Practical Gardening. The remarks here are perhaps too general to be of much service to the inexperienced, and the subject, which from its nature requires a considerable amount of detail, would have been more wisely dealt with in a separate volume. The principles of culture are well laid down, but the attempt to compress within the limits of a few pages all the essential points of the successful treatment of various classes of plants must ever prove unsatisfactory. Our candid opinion is that too much has been aimed at. A full enumeration of *all* the best subjects in each genus, with a little expansion in some of the descriptions, excluding all other matter, would have rendered the work more valuable to the vast majority of those who may desire to possess it.

We extract the following account of the Honeysuckles as a specimen of some of the best of the selections and descriptions, with their accompanying illustrations:

LONICERA.

Erect prostrate or climbing shrubs with opposite simple entire or lobed deciduous or persistent leaves, and cymose or capitate, often fragrant, flowers sometimes adhering together by the ovaries in pairs. Calyx-limb of five often unequal teeth. Corolla tubular or bell-shaped, gibbous at the base in some species, with the limb oblique or two-lipped. Stamens five. Fruit a fleshy two or three-celled berry. There are upwards of eighty species in the temperate and warm regions of the North. This genus was named in honour of the German botanist Lonicer. There is great confusion in the nomenclature of the Japanese and Chinese Honeysuckles, arising probably from the fact that many of them are garden varieties.

1. *L. Periclymenum.* Honeysuckle or Woodbine.—This favourite indigenous shrub is surpassed by none of the exotic species in the profusion and fragrance of its flowers, but for brilliancy of colouring there are many superior. Flower-heads terminal, peduncled; upper leaves sessile; berry crimson. There are several improved varieties, including the Dutch, L. Bélgica, the Oak-leaved, L. quercifòlia, and late red, L. serótina, and one with variegated foliage of little merit.

2. *L. caprifòlium,* syn. *Caprifòlium itálicum.*—This species strongly resembles the preceding in the colour of its flowers, but the flower-head is sessile and the upper leaves connate. A native of the South of Europe.

3. *L. Etrúsca.*—Flowers orange-yellow, capitate; heads pedunculate. Upper leaves connate, young ones hairy beneath. A native of the South of Europe, flowering in May, though not so freely as some.

4. *L. sempervìrens.* Evergreen or Trumpet Honeysuckle.—This in its different varieties is one of the handsomest species in cultivation, bearing its scarlet inodorous flowers in great profusion for a considerable period in summer. The leaves are quite glabrous, oblong or rotundate, glaucous beneath, and persistent during the greater part of the winter. The variety named Brównii, in which the flowers are of a brighter hue, is one of the best. It is a native of North America. L. coccínea and L. pubéscens are allied species from the same country.

5. *L. brachypòda.*—One of the best evergreen species. Leaves oval or oblong, glabrous and shining, with short hairy petioles. Flowers medium size, in pairs, pale yellow, and very sweet-scented. There is a handsome and very desirable variety, named aùreo-reticulàta, in which the foliage is beautifully netted or variegated with yellow, with a mixture of red towards autumn. This is undoubtedly one of the most elegant variegated plants in cultivation, and like many others of its class a native of Japan. L. japónica, or L. chinénsis, is a form of this species with more or less hairy leaves.

6. *L. flexuòsa.*—Stems and young leaves hairy. Leaves ovate-lanceolate, purplish below when young. Flowers pink and yellow, in pairs, very fragrant. Japan.

7. *L. xylósteum.*—An erect species with small ovate or obovate hairy leaves and hairy yellow small flowers in axillary pairs. There are varieties with white, yellow, crimson, and black berries. A native of Europe, introduced in some parts of this country. L. Tatárica is an allied species with rosy-pink flowers in the common form, and yellow or white in the varieties.

8. *L. fragrantíssima.*—This species is desirable as an early-flowering plant. It puts forth its pure white highly odoriferous flowers in February before the leaves are developed. L. Stándishii, very near the preceding, has purple and white scented flowers. Both are natives of China.

Paraffin Oil.—*Les Mondes* informs us that M. Jordery renders paraffin oil as thick as honey, by means of a vegetable powder (Saponaria), and thus prevents the liability of its causing fire, without, in any way, interfering with its properties, as it can be rendered fluid by the addition of a few drops of strong acetic acid. This is good news for people who employ it *inter alia*, for keeping frost out of small greenhouses.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—Spring flowers are now daily becoming so plentiful that herbaceous and shrubbery borders are getting quite attractive; on lawns, too, are tufts of Crocuses, Snowdrops, Dog's-tooth Violets, and other favourite bulbous plants that annually spring up and unfold their beauties when once planted in such positions. They get cut down prematurely by the first turn of the scythe or lawn-mower, but the following year they spring up again numerically increased, and with greater vigour than before. Under the wide-spreading canopy of large dociduous trees a spring carpet of white, yellow, and blue, furnished by early blooming bulbs, is most desirable and pleasing, and in such a situation they thrive where not a vestige of Grass will grow. Only the commoner kinds, however, should be used in that manner, for the finer ones, if so treated, are apt to degenerate; hence the necessity of a good position for them, where they can retain their foliage until the bulbs are properly matured, when the foliage may be cut over, and the surface of the ground carpeted with annuals or other shallow-rooting plants. Lawns should be swept, rolled, and if necessary mowed. Where they are covered with moss it should be raked off, a top-dressing of finely sifted soil applied, and some Grass and white Clover seeds sown at the same time. The top-dressing should be equally spread, raked smoothly and level, and then well rolled. Should the lawn be thinly covered with grass, although free from moss, a top-dressing of good soil with some guano mixed with it, and also a sprinkling of Grass and Clover seed will greatly renovate the turf; before applying it, however, go over the surface with an iron-toothed rake, so that the old and new soils may the more readily unite; soot, salt, or guano applied alone in rainy weather is also productive of excellent results. If the edges of lawns or Grass walks be well rolled before trimming them, that operation can be more neatly and accurately done. Turfing of lawns may still be performed, but the sooner such work is finished now the better will the Grass stand the summer's drought. In the absence of turf, seeds may be used, but in that case a long time elapses before a thick close carpet can be formed, and continuous attention in the way of mowing is requisite. Alterations in the flower garden or pleasure grounds may still be proceeded with. The planting of deciduous trees cannot, however, be too speedily finished now for a season; evergreens may be transplanted later. Coniferous trees, as a rule, transplant very well in the spring time. In planting, preserve the roots as entire as possible, and do not bury them more deeply than is necessary; stake such as require support. Instead of roughly filling in the soil, it should be well and carefully worked in amongst the roots with the hand, and a good soaking of water at planting time has also an excellent effect in settling the soil about the roots. Rose planting should now be proceeded with; indeed, where the trees are grown on their own roots, this is a good season for transplanting them. Roses in general may now be pruned. A thinning of the shoots is sufficient for strong growing kinds, whilst some of the dwarfer and more compact sorts bear a severe shortening of the shoots with impunity. A good dressing of manure should now be forked into Rose beds or borders. Transplant spring-flowering plants as occasion requires, and dust some fresh air-slaked lime amongst them to keep off slugs. Transplant seedling Pansies, and pinch the tops out of old plants, to encourage the production of laterals and continuity of flowering. Transplant autumn-sown Mimuluses and annuals, such as Candytufts, Nemophila, and Esshscholtzia, where they are to bloom. Biennials, such as Rockets, Sweet Williams, Wallflowers, Hollyhocks, Canterbury Bells, Foxgloves, Anchusas, &c., may also be similarly treated. Annuals for early flowering may be sown in light soils and in warm situations; sow thinly, and thin out a little immediately after the seeds germinate. Remove last year's shoots, if any, from herbaceous plants, and give the borders in which they grow a good dressing of well-decayed manure. Overgrown specimens should be lifted, divided, and transplanted either permanently or in nursery lines, as may be most convenient. Where mulchings of leaves, straw, or litter were placed around the necks of plants of Pampas Grass, Tritomas, &c., remove them gradually. The protection given to Myrtles, Loquats, Clematises, and other all but hardy plants on walls, may now be partially, and, in many cases, wholly removed. Finish planting Box, Euonymus, Santolina, Japanese Honeysuckle, and Ivy edgings. If any of these are turned out of pots, shake the soil from their roots, and spread the latter well out; after such treatment they may remain stationary or nearly so for a few weeks, but when they begin to grow they will proceed with a vigour unknown to plants committed to the soil with matted roots. The golden variegated Thyme is now popular as an edging plant, and deservedly so, for it is quite hardy; old plants of it may now be lifted, divided, and transplanted permanently: any in pots subjected to an increased temperature will afford cuttings freely, and they will root as readily as Verbenas. An edging formed by dividing old plants last autumn has now scarcely a plant in it alive, whereas one formed in the same way alongside of it last spring has withstood the winter unscathed. Campanula carpatica, Stachys lanata, Cheiranthus Marshalli, Cerastium, &c., make excellent edgings, and this is the right time for forming them.

Greenhouse Plants.—Remove some of the most backward Cinerarias to a north house, so as to preserve their lateness; water those that are in bloom freely, and occasionally with manure water; keep them free from insects by fumigation. Chinese Primulas required for seeding should not be burdened too much; therefore reduce the quantity of flowers on each plant to one or two trusses, according to the strength of the plants. Remove into a corner of some pit the finest Cyclamens for seeding purposes; half a dozen or so of flowers are sufficient on each plant, and there is no necessity for artificial assistance in fertilisation unless new colours are aimed at. Keep herbaceous Calceolarias growing gently, by supplying them liberally with water and keeping them in a light and airy house and near the glass. Repot such show and fancy Pelargoniums as require it, and, if possible, place them on stages quite close to the glass in houses abundantly ventilated; if a little artificial heat be given at the same time a beneficial influence will soon be manifest in the green healthy foliage and stubby growth of the plants which is so productive of abundance of flowers. Violets that were bloomed in pots during the winter may now be transferred to a warm border. Give a little water to such Japanese Lilies as are beginning to grow. Hyacinths and Tulips should be kept as cool as possible and in light houses; they have come on so quickly this season that it is difficult to retain them late enough for some of our exhibitions. Lachenalias are now blooming pretty freely; keep them near the glass and treat them liberally. Repot young Fuchsias, pinch the points of the branches at the fourth or fifth joint, and keep the plants in the warmest part of the house. Some of the old plants may be shaken out of their present pots and repotted in others according to size in good open compost. In pruning the old plants, be rather sparing until they begin to grow. Statices should be repotted and kept in the warmest part of the greenhouse; the old plants may be shaken out of last year's pots and repotted in smaller ones, for once growth begins in Statices they must never suffer for want of pot-room. Save all seeds of Solanum capsicastrum; cut down the old plants, and save young shoots for cuttings. Repot, and remove for the same purpose the suckers of Calla æthiopica. Cut off the ends of the branches, and thin plants of Veronica Andersoni; then start them into growth. Salvias in pots, and rested during the winter, if now pruned, repotted, and kept in moderate heat, become fine flowering plants in a short time. Kalosanthes coccinea should now be repotted in a compost of good loam and some thoroughly decayed manure. Cut back Bouvardias that have done flowering, and use the young shoots for propagating. Cut back, repot, and start into growth some plants of the Lemon-scented Verbena. Turn out into frames young Chrysanthemums, and see that none suffer for want of potting. Repot and stake choice Petunias, and sow some seeds in light soil in gentle heat, for conservatory blooming; the surplus may be economised for bedding purposes. Train Tree Mignonette, and admit plenty of air to dwarf-growing plants in pots. Mimuluses of the finer varieties, as well as Musk, may be potted in two parts loam and one of decayed manure, with some sand; they soon grow and form nice flowering plants. Wire baskets containing the latter, and also others planted with Mother of Thousands, may now be made up either for the window or for suspending from the roof of the conservatory. Some Globe Amaranths may now be sown in moderate heat, and pricked off when the young plants appear. Balsams, Cockscombs and other Celosias, Cinerarias for autumn flowering, Schizanthuses, &c., may be treated in the same way.

Ferns.—The general potting of these should have been done last month; but, if the operation has been delayed until now, it ought to be at once accomplished. If the plants have begun to grow, they will be more liable to suffer from shifting than they otherwise would be; but with careful attention in the way of shading, maintaining an equable but gradually-increasing temperature, and supplying a moderate amount of moisture, both to root and top, little danger need be apprehended. Ferns whose fronds spring directly from the soil require a richer compost than such sorts as Davallia canariensis, whose rhizomes grow above ground. To the former give a mixture of equal parts of good fibrous peat and loam, with the addition of some leaf-mould, plenty of silver sand, and some small chips of fine sandstone. If the plants be required, however, for furnishing purposes, a little more loam and a little less peat will induce a hardier growth, and one better adapted for house-work than the luxuriant growth promoted by the first-named soil. Those with rhizomes above ground may be potted in fibrous peat and a little leaf-mould, pegging the rhizomes down on the soil. Some of the Davallias, Polypodiums, Phymatodes, Pleopeltis, and others grow well on old stumps of tree Ferns, affixing themselves thereto like Orchids; if the stumps are in the vicinity of other Ferns, spores of different species are sure to vegetate in their crevices, more particularly those of Adiantums, Gymnogrammas, Aspleniums, and Pterises. Syringing Ferns is an operation requiring skill and care, for although some genera are partial to such treatment, others are particularly averse to it, more especially the Adiantums, Gymnogrammas, Cheilanthes, and other delicate and farinose kinds. Filmy Ferns are best grown in glass cases, or under handlights or bell-glasses, or a division of the Fernery may be specially set apart for their culture. Most of the small delicate species thrive well on blocks of decaying wood, pieces of the tree Fern stumps, or in pots; whilst for strong-growing kinds, like the Todeas, pot culture is the best and most convenient. For pot culture fibrous peat, chopped sphagnum, and some fine sandstone chips make a good compost, and for Todeas the surface may be mulched with live sphagnum. The smaller kinds of Ferns thrive well on little mounds composed of fibrous peat and sandstone chips, or on a block of wood embedded in turfy peat from which they can emerge and scramble over the wood. These Ferns like a steady moist atmosphere, but too much artificial heat is detrimental to them; in fact, a greenhouse temperature is almost sufficient for the whole of them. In watering let the water fall lightly upon the fronds; but in addition to these slight sprinklings, water must also be given to the roots, more especially during the growing season. Hanging baskets should now be replenished with Ferns and Selaginellas, and Wardian cases should be examined and refilled if necessary.

Hardy Fruit Trees.—Finish the pruning and nailing of fruit trees on walls as expeditiously as possible, and give the trees a thorough washing with the garden engine. The flower buds in the case of stone fruits are almost ready to burst; indeed those of Apricots, on warm walls, are beginning to open. Some kind of protection must therefore be afforded them without delay. Fruit trees and bushes may yet be planted, but the sooner the operation is finished now the better. Cuttings of Gooseberries may still be made, and inserted in nursery lines a foot apart, and from 4 to 6 inches asunder in the row; cuttings put in in autumn are, however, decidedly preferable to those inserted in spring. The cuttings should be 10 inches long, and divested of all buds except three or four at the top. No buds should be buried in the soil, nor be allowed to exist on the 3 inches of stem just above the ground. Scions for grafting should be taken off, if not already done, and "heeled" in until wanted for use. Make fresh plantations of Strawberries if necessary, remove all runners from old ones, fork over the soil between the rows, and incorporate with it some well-decayed manure at the same time. If a dressing of rough litter be applied between the rows after the ground has been forked over, it will serve as a mulching, and the rains will wash down nutriment from it to the roots, while the surface will form a clean resting-place for the forthcoming crop.

Kitchen Garden.—Make plantations of Jerusalem Artichokes in lines from 2 to 3 feet apart, in any odd corner of the garden. Plant Horseradish sets 15 inches deep, in thoroughly trenched ground, in rows 18 inches asunder. Plant the main crop of Potatoes. Autumn-sown Angelica should now be transplanted in rows 2 feet apart, in rather moist soil. Mint may be divided and transplanted alongside of the Angelica, in lines 15 inches apart. Seakale roots may be transplanted for next year's crop, and some seeds of it sown thickly in beds. Divide the roots of such plants as Hyssop, Chamomile, Pennyroyal, Sage, Savory, and Rue, and transplant them into fresh beds. Sow some Marrow Peas; a good plan is to plant four rows of Potatoes, then a row of Peas, and so on; this gives the Pea crop more light than it otherwise would have. Sow a full crop of Beans, and draw some earth to those that are above-ground. Sow some Leeks for transplanting; also some Parsnips in lines 20 inches apart, in deeply-trenched ground. Sow likewise some Cos Lettuces on a warm border, and plant out those that have been wintered in frames. Sow some round-leaved Spinach between rows of dwarf Peas or elsewhere; also early Horn Carrots at once, if the ground is in good order, and a main crop in the last fortnight of the month. Sow the main crop of Onions as soon as the ground is in good condition for its reception. If Parsley has not been already sown, some should be put in at once. Sow also some Asparagus seeds in drills 18 inches apart, but do not transplant last year's seedlings till next year. Gradually remove the protecting material from the necks of Globe Artichokes. Sow some Brussels Sprouts and other members of the Cabbage tribe for autumn use. Of Rocambole, Garlic, Chives, and Shallots, transplant cloves or offsets at once.

MARKET GARDENS.

Where the late snow-storm has killed newly-planted Lettuces, let the vacancies be made good without delay. Radishes should be sown with or without a covering of litter; but some protection of that kind at this early period of the season greatly assists them. A large sowing of White Dutch Turnips may now be made broadcast on a warm piece of ground; those sown on beds should be covered and uncovered daily like Radishes. Finish transplanting autumn-sown Onions as soon as possible; ground on which Rhubarb, Parsnips, Asparagus, Savoys, or Brussels Sprouts have been growing may be devoted to them. Manure it well, trench it, level it with a rake, then trample it with the feet; after that roll it, and finally line it off and transplant. The Tripoli Onions are preferred to all others for drawing from the beds in spring, on account of their long white necks, while their hardiness renders them suitable for autumn sowing. Sow the spring crop of Reading and Deptford Onions at once. Leeks should be sown in a frame heated with 18 inches deep of litter, and as they come up the sashes should be tilted up a little. Plants from this sowing are well suited for transplanting, as they come in earlier than those sown in the open air. Keep the sashes on frames, where Lettuces are only germinating, tilted up a little throughout the day; but shut them up at night. Expose completely autumn-sown ones, and transplant them in every available piece of ground. Where they have been wholly removed from amongst Carrots, the frames and sashes may also be taken away and used for Cucumbers, young Lettuces, Leeks, Tomatoes, Marjoram, or other plants requiring their assistance. Sow the main crop of Parsnips as speedily as possible—the hollow-crowned variety is the best. Plant also the main crop of Potatoes and Jerusalem Artichokes. Any Cabbages yet unplanted should be put in at once. Proceed with the planting of Seakale roots, as formerly directed: some recommend seedlings starved for the first twelve months in the seedbed, where they are sown thickly; but cuttings of roots are by far the best, and least troublesome. Dig and trench all spaces from which crops have been cleared. Plant out autumn-sown Parsley, about 6 or 8 inches plant from plant.

INCOMBUSTIBLE WOOD.

At a meeting of the Society of Arts, a paper was read by Mr. D. O. Macomber, on the desirability and process of rendering wood for building and other purposes incombustible. The lecturer dwelt at the outset on the great advantages possessed by wood over other building materials, such as stone or iron, even where the substitution of the latter was feasible, provided that that substance, naturally so inflammable, could be rendered so impervious to the action of heat as to prevent its bursting into flame when subjected to an excessively high temperature. There were, he said, very many means by which fire might be accidentally kindled, but to render it to any extent injurious it was essential that it should have a more or less free supply of atmospheric air. This air in ordinary seasoned wood penetrates the minute and innumerable sap-tubes with which all timber is pierced, and from which, by the process of drying, the liquid has been extracted. Thus, on the application of a strong heat, the dry wood is at once ready to burst into flame. Many methods, Mr. Macomber went on to say, had been hitherto invented by which the exterior, but only the exterior, of any woodwork might be for a time protected; but what was really and essentially wanted was some means of thoroughly permeating the wood with a liquid which should effectually protect it from the action of heat. Of course the carbonizing effect of fire could not be combated, but the object would be gained if the outbreak of flame could be avoided. This is precisely what Mr. Macomber proposes to effect. His plan—the details of which are somewhat too complicated for notice here—is to extract, by hydraulic pressure, steam, or other means, the sap from freshly-cut or "green" timber, replacing by chemical means the moisture expelled with a solution containing some substance or substances which, without producing any other material change in the character of the wood, shall render it for ever incombustible—that is to say, proof against all but the charring effects of heat. The precise nature of the solution to be used was not stated. Mr. Macomber has, he thinks, satisfactorily ascertained that it will by no means affect the colour of the wood, or the facility of cutting and fashioning it. The weight, lastly, will not be increased more than about two and a half per cent. Not only will the action of fire be resisted, but the rotting produced in ordinary wood by the boring of worms and other insects will be entirely kept off. The preparation, taken only superficially, has, as has been seen, a decided advantage over the silicious solutions formerly used to steep timber in, which have been found so injurious to the tools of the artificers engaged in working it. As the operation must be carried on while the wood is in its green or undried state, it follows as a matter of course that it must, in order to be of any use, be applied largely before exportation from Norway, Sweden, Canada, and other countries from which we obtain our large timber supplies. The estimated increase in the price of wood so treated is stated to be less than twenty per cent.

NOTES OF THE WEEK.

—— Among various interesting and well-grown subjects sent to Kensington the other day by Mr. Herbst, of the Kew Nurseries, was a batch of forced Lilacs dwarfer than we have ever seen them before. To secure blooming plants of such a popular flower so dwarf as to be fitted for association with small subjects on greenhouse stages, and which may be readily placed in a case in the sitting-room, is a great point, and we hope Mr. Herbst will make these dwarf plants popular.

—— Mr. Edwards, superintendent of the Regent's Park for the last twenty years, has been presented with a testimonial of the value of nearly 100 guineas, by the officers and men employed in the park, as a mark of their esteem and respect, and for the kind way in which Mr. Edwards has discharged the duties of his office. Every man, however poor, and they are all at weekly wages, felt bound to give, and gave unasked, that which he could with propriety spare. Mr. Edwards is seventy-five years of age.

—— Active preparations are now being made at Ghent for the Horticultural Exhibition which will be held there from the 30th of this month to the 6th of April. An area of about 5,000 square yards is being covered in with glass structures, which will be divided into three compartments, heated to different degrees of temperature. We are informed that M. le Bourgmestre, of Ghent, is arranging his rich collections of Palms, Ferns, &c., for exhibition in his great conservatory, which measures 292 feet in length, by 78 feet wide and 65 feet high. Visitors to the Horticultural Exhibition will, we believe, be free to inspect this fine collection.

—— Some years ago Lord Mayo offered a reward of £10,000 for a machine to clean and prepare Rhea fibre for the market. Mr. Greig, of Edinburgh, alone entered the lists, and his patent, which has been tried at the Saharumpore Botanical Garden, has proved so far hopeful that Government has awarded him £1,500. Rhea fibre is furnished by Bœmeria nivea, the Rhea of Assam, a plant belonging to the Order of Nettleworts. The beautiful fabric known in England as Grass-cloth, which rivals the best French cambric in softness and fineness of texture, is manufactured from the fibre obtained from the inner bark of this little shrub, which has long been cultivated both in China and India. Experiments made with the view of testing the strength of this fibre have proved it to possess nearly double the tenacity of Russian Hemp.

—— Amorphophallus Rivieri is at present in bloom in the nurseries of Mr. Wimsett, Ashburnham Park, Chelsea. The spathe is of a brown colour, and the spadix, which is thick and fleshy and about 15 inches long, is of a darker brown even than the spathe, above which it rises several inches. The spathe is broadly campanulate, and beautifully undulated at the margin. Like other members of the singular tribe to which it belongs, it emits a disagreeable odour whilst in bloom, though not quite so bad as that of some of the others. The plant is of easy culture, requiring only warm greenhouse treatment and open spongy material to grow in. In the United States this remarkable Aroid is used for the ornamentation of the flower garden, to which its peculiar foliage renders it an acquisition.

—— Some choice Orchids and other plants, the property of Mr. Dixon, of Beverley, were sold the other day at Stevens'. Angræcum sesquipedale, among others, fetched 14 guineas; Cœlogyne cristata, 13 guineas; Odontoglossum Andersonianum, 11 guineas; Vanda Dennisoniana, £8, and others from 2 to 5 guineas. The total amount realised for 346 lots was £430. Good bulbs of Lilium auratum sold by the same auctioneers fetched from 1s. to 2s. 6d. each, L. Washingtonianum from 3s. to 5s. each; L. concolor angustifolium, 2s. 6d. each; L. californicum, 4s. to 6s. 6d. each; L. carniolicum, 2s. 6d. to 3s. each; L. tigrinum Fortunei, 10d. each, and L. longiflorum from 4d. to 5d. each. Pinus seed fetched from 3s. to 5s. an ounce. The sale of some 591 lots brought altogether £359.

—— Messrs. Teutschel & Co., of Colchester, who have imported plants of the Kaki or Chinese Date Plum, from Japan, have, we observe, instructed Messrs. Stevens to sell them by auction on Monday next. The Kaki is a native of both China and Japan, and is cultivated in India. The fruit when ripe is of a bright reddish-orange colour, about the size of an Apple, and has a yellow fleshy pulp, somewhat like that of a Plum. The Chinese eat these fruits both in a fresh and dried state. They are said to have an Apricot flavour, blended with that of the Medlar. They are the produce of a Diospyros, concerning the specific name of which some controversy has arisen. M. Carrière first called it Diospyros Kaki, then D. costata, a name under which it is figured in *Revue Horticole* for July 16th, 1871. M. Decaisne objects to both these names, and calls it D. Schi-Tse. It may possibly succeed against a south wall in the warmer parts of this country, or at least in an orchard house, and as upwards of a hundred trees of it are to be sold, the sale may be expected to excite considerable interest. Some rare Lilies, a quantity of Calochortus, and the beautiful Erythronium giganteum are also to be sold on the same day.

—— M. Léon Sisley, writing from Japan, on the 29th of last December, states that, notwithstanding the winter had just set in there with 3° or 4° of frost, the Camellias growing in the open air were beginning to open their buds.

—— Messrs. Protheroe & Morris, the well-known auctioneers and estate agents, of Leytonstone, have just started a new *Horticultural Register*, which is to be published on the first of every month. The register will contain a list of nurseries, market gardens, florist and seed businesses, to be let or sold; and to those who are desirous of renting or purchasing, an opportunity will be afforded of fully stating their requirements. Firms desirous of taking in a partner, and persons seeking a partnership, will in this way also be enabled readily to obtain the requisite information.

—— We have just received from Messrs. Capes & Dunn a catalogue of the Manley Hall collection of plants, all of which are to be sold by auction on the 7th, 8th, 9th, 10th, 15th, 16th, and 17th of next month. The catalogue contains 1,623 lots, consisting of some of the finest specimens of indoor plants in the kingdom, many of which are both new and rare. The first four days will be devoted to the sale of Orchids and a few Pitcher Plants; the last three days to miscellaneous stove and greenhouse plants.

—— The Mayor of Hyères (Var) has made over to the Society of Acclimatisation at Paris about fifteen acres of ground for the formation of a branch Garden of Acclimatisation, in connection with the Jardin in the Bois de Boulogne. The deed of conveyance gives the society sole possession of this property, free of all charge, for twenty-six years. The establishment of a branch in the mild climate of Hyères will doubtless be followed by important results, as the society will thus have an opportunity of experimenting with many tender subjects which will not endure the winter at Paris.

—— In the Winter Garden at Kew is an extremely handsome plant of Araucaria Bidwillii, about 26 feet in height; its branches cover a space of 21 feet in diameter, and its trunk measures over 2½ feet in circumference at a foot above the ground. It is planted out in one of the borders, where it grows freely, and last year bore 13 cones about 2½ feet from the top of the tree; ten of them are still on the plant, three having lately dropped off, owing to being decayed at the core. These cones are about 5 inches in diameter and 8 inches long, but as they take three years to come to maturity, those yet on the plant may become much larger. This specimen is said to be one of two introduced from Australia in 1842, the other plant being purchased by the late Duke of Devonshire for one hundred guineas. In its native country the seeds of this Araucaria afford an article of food for the natives.

—— An eminent Chancery barrister, who has been consulted on the legality of the propositions recently submitted by the council of the Royal Horticultural Society to the Royal Commissioners, has delivered his opinion, "that Clauses 3, 4, 6, 10, and 11 of the proposed agreement are beyond the powers of the council, even if they obtain the assent thereto of a majority of Fellows at a general meeting; and that, upon a bill filed on behalf of the Fellows and debenture holders, the Court of Chancery would restrain the council and the society from entering into or acting upon any such agreement." The Council, we understand, are still anxious to "resign in a body," and new bye-laws, enabling them to do so, will, we hear, be submitted soon to the consideration of a general meeting of the society.

—— Some short time since we announced that Mr. Carmichael, late of Sandringham, had been appointed superintendent of the gardens at Hampton Court. It now appears that this announcement was premature. Mr. Carmichael had obtained the recommendation of his late Royal employer and other friends, and was accepted by the Board of Works, subject to the consent of the Civil Service Commissioners. That body were satisfied as to Mr. Carmichael's ability and testimonials, but refused to appoint him on the score of age—Mr. Carmichael, though in the prime of life, being a few years older than the assigned limit. Looking at Mr. Carmichael's status in the gardening world, however, we cannot but hope that some situation worthy of his abilities may speedily be found for him. Hampton Court is still vacant, and Her Majesty's Commissioners of Works will be ready, we understand, to consider applications for that situation from educated gardeners experienced in laying out grounds, in the management of men, and in keeping accounts. The limits of age are from 30 to 45, and the salary is £130 per annum, together with apartments in Hampton Court Palace. Persons desirous of becoming candidates for this appointment should make immediate application in writing, accompanied by testimonials, to the Secretary, Her Majesty's Office of Works, 12, Whitehall Place, S.W.

SOCIETIES, EXHIBITIONS, &C.

ROYAL HORTICULTURAL SOCIETY.

(March 5th.)

Prominent among subjects exhibited on this occasion were several extremely fine collections of Cyclamens and Orchids, together with forced flowering plants, hardy spring flowers, Camellias, and Chinese Primulas.

Cyclamens.—These were staged in great numbers by Mr. Goddard, gardener to H. Little, Esq., Cambridge Villa, Twickenham, whose plants were in beautiful condition, the foliage being large, fleshy, and finely variegated, and the petals of the flowers, of which there were from one to twelve dozen on each plant, broad, blunt, and regularly reflexed. Their colours ranged from snowy-white to deep crimson, the gradations between these two extremes being rose, salmon, and other intermediate tints; but the white sorts seemed to be the most appreciated. Nor were Mr. Little's plants the only fine Cyclamens shown, for Mr. James, of Isleworth, furnished some excellent plants both in the competing classes and also for exhibition. From Mr. B. S. Williams also came a collection of Cyclamens, and Mr. Smith, nurseryman, Ealing, likewise contributed a group of young blooming plants furnished with remarkably fine flowers.

Chinese Primroses.—Among these, Waltham White, exhibited by Mr. Wm. Paul, stood in the first rank. Its flowers are of the purest white, individually large, and of good substance, produced in good-sized trusses, and the foliage is strong, robust, and fern-like. Of Princess Louise, white, tinged very faintly with pink, and Marquis of Lorne, a large crimson-flowered kind, several fine plants were exhibited by Mr. James, Isleworth. These two kinds have flowers exceptionally large and fine.

Roses.—Of these Messrs. Veitch and Sons exhibited a grand collection of small, well-flowered specimens, each plant bearing from half a dozen to two dozen flowers. The foliage, too, was in admirable condition. The following are the names of some of the kinds:—viz. (Hybrid Perpetuals), Princess Mary of Cambridge, Marie Ducher, Mme. Marie Cirodde, Mme. Fillion, Mme. Victor Verdier, Mons. Boncenne, Maurice Bernardin, Victor Verdier, Marechal Vaillant, Jean Goujon, Anna de Diesbach, Camille Bernardin, Anna Alexieff, Dr. Andry, Beauty of Waltham, Prince Eugene Beauharnais, Pierre Notting, Madlle Marie Rady, Exposition de Brie, Pitord; Moss Rose—Lanei; Hybrid Bourbon—Charles Lawson; Bourbon—Rev. H. Dombrain; Tea—Mme. Villermoz.

Camellias.—Of these, both in the form of plants in pots and cut flowers, there was a good supply. Six large well-flowered specimens in pots were contributed by Messrs. Veitch & Sons; they consisted of Angustina superba, Fimbriata alba, Leon Lequay, Donkelaari, Teutonia alba, and Bonomiana. From Mr. W. Paul, of Waltham Cross, came a large group of extremely pretty well-flowered small plants. Mr. Paul also contributed a large collection of cut flowers; and the classes set apart for competition were well furnished by collections from Mr. George, Putney Heath, and Mr. Grant, Withington Hall, Congleton.

Lilies of the Valley.—Two boxes of as finely grown plants of these as it is possible to imagine—both flowers and foliage being abundant and excellent—came from Mr. Herbst, Kew Road Nurseries, Richmond. Mr. George, gardener to Miss Nicholson, Putney Heath, and Mr. James, also contributed excellent examples of this favourite Lily.

Hardy Plants.—These were almost wholly furnished by Mr. Ware, of Tottenham, whose collection contained many pretty little plants, prominent among which were Iris tuberosa and reticulata; Primula farinosa, denticulata, altaica, japonica, cortusoides, amœna, and the beautiful P. verticillata; Rhodeas; Narcissi; Scilla bifolia and sibirica; Triteleia uniflora; Anemone blanda; Bulbocodium vernum; the Crimean Snowdrop; Funkias, &c. From Mr. Dean, of Ealing, came two exceedingly handsome quite new hardy Primroses of free-flowering habit; both received first-class certificates.

Orchids.—These as usual formed the most important part of the exhibition. Messrs. Veitch had, amongst others, a grand plant of Dendrobium Wardianum bearing twenty-seven flowers, and for which a cultural commendation was awarded; also D. thyrsiflorum with densely-flowered spikes, D. primulinum, a fine basket Orchid, the pretty blue Vanda cærulescens, V. suavis, and the singular yet handsome V. Cathcartii. Amongst Odontoglossums the same exhibitors showed lovely examples of O. Alexandræ, especially one called O. A. maculatum, a curiously spotted kind; likewise O. nebulosum, and O. n. pardinum, a dark-brown spotted sort, a finely-flowered specimen of O. Andersoniaum, and several other fine Orchids; associated with these were Palms, Amaryllises, &c., and a dark-leaved variety of New Zealand Flax, called Phormium atropurpureum. In a collection from Mr. B. S. Williams were some good varieties of Lycaste Skinneri, Trichophilia suavis, nice specimens of Cypripedium Warneri and villosum, well-bloomed plants of Vanda insignis and Phalænopsis grandiflora, and several fine examples of Odontoglossums, such as Alexandræ, gloriosum, Rossii, and cordatum. Besides these, there were, moreover, a plant of the small-flowered Ornithidium coccineum, Dendrochilum glumaceum, and others. These were effectively backed up by Palms, such as Cocos Willisii, Thrinax elegans, and Corypha australis; Dracænas, a nice plant of the charming Tillandsia Lindeni, and a grand specimen of Imantophyllum miniatum, bearing half-a-dozen immense heads of flower. In a group of Orchids shown by Mr. Wm. Bull were plants of Odontoglossum Pescatorei, well furnished with flowers, and others of O. gloriosum, luteopurpureum, and triumphans, all in first-rate condition; also Lycaste Skinneri, Dendrobium nobile, and others. Amongst miscellaneous plants from the same exhibitor, and which were intermingled with Orchids, were examples of Encephalartos villosus expansus, and E. Cycadiæfolius compactus, both fine plants; Palms, Dracænas, Marantas, &c., and Amorphophallus Rivieri, an Araceous plant, whose singular inflorescence seemed to excite much interest. A grand collection of Orchids was also contributed by Messrs. Rollisson & Sons, of Tooting, in which were some good plants of Dendrobium nobile, pulcherrimum, and Wardianum; a fine example of Saccolabium giganteum and of Dendrochilum glumaceum; and of Odontoglossums, good plants were contributed of O. nebulosum and Andersonianum. In the same group were likewise plants of Oncidium leucochilum, Vanda suavis, Phalænopsis Schilleriana, and a few fine Cypripediums. From Mr. W. Denning, gardener to Lord Londesborough, at Surbiton, came a grand collection of Orchids; among which were several fine forms of Cattleya, a few good Odontoglossums, particularly Alexandræ and Andersonianum, and a very fine example of Cymbidium eburneum. The same group contained, moreover, a plant of Bolbophyllum siamense, a pretty little free-blooming brownish-yellow flowered Orchid, Epidendrum paniculatum, some fine Dendrobiums, and a grand plant of Cœlogyne cristata Lemoniana. A noble group of these valuable and popular plants was also furnished by Mr. C. May, gardener to J. S. Pockett, Esq., Muswell Hill; it included, amongst others, some fine Cattleyas, Lycastes, Cypripediums, Oncidiums, Odontoglossums, a good plant of Lælia anceps, an excellent example of Dendrobium crassinode, one of Masdevallia tovarensis, and several others. Of Dendrochilum glumaceum, a very fine specimen was furnished by Mr. Lawrence, Farnham Castle, for which a cultural commendation was awarded. Of Dendrobium aggregatum, Mr. Croucher exhibited a most profusely-bloomed plant growing on a block.

Miscellaneous Subjects.—Some exceedingly well-grown and bloomed Persian Lilacs in pots were shown by Mr. Herbst, of Richmond. Forced plants of Astilbes and Deutzias were also contributed by the same exhibitor, who likewise showed Ferns, Palms, Azaleas, &c. From Mr. George, Putney Heath, came several Ghent Azaleas, Rhododendrons, and Andromedas in flower.

Fruit and Vegetables.—Several bunches of last year's Grapes were exhibited in an excellent state of preservation, the berries being large and quite plump, and the bloom untarnished; they consisted of the Black Alicante and Lady Downes, and were shown by Mr. T. Bannerman, Blithfield; by Mr. Sage, Ashridge Park; and by Mr. Parsons, Danesbury. From Mr. Dancer, of Little Sutton, came three dishes of Apples, large, firm, and excellent in quality; they were Northern Greening, Reinette de Caux, and Dumelow's Seedling or Wellington. A collection of vegetables grown at Naples was exhibited by Mr. C. Picarillo, of 43, Wigmore Street; they comprised Spring Onions, large and good, Naples new Salad and Cabbage Lettuces, with solid heads, Endive, Early Peas, a large Turnip-like white Radish of excellent flavour, two kinds of Broccoli, one a purple and the other a white kind, with large, compact heads, specimens of the tuberous-rooted Fennel, Lemons, and one or two other subjects of less importance.

First-class Certificates.—These were awarded to the following, viz.:—

To Odontoglossum nebulosum, var. pardinum (Veitch), a variety with flowers distinctly spotted with very dark-brown blotches.

To Lælia sp. (Veitch), a beautiful kind from Brazil, with flowers of a deep-orange colour.

To Odontoglossum sp. (May), a handsome sort with large showy yellow and brown flowers.

To Asplenium longissimum (Veitch), a species with comparatively narrow fronds, which are however 3 feet long, making it an admirable Fern for basket-work.

To Agave Kerchovii (Croucher), a medium-sized species with long narrow leaves sharply pointed; spines hooked a little, those on one side being inclined towards the point of the leaf; those on the opposite side towards the base.

To Agave Baxterii (Croucher), a nice stubby medium-sized kind.

To Agave perbella (Croucher & Wilson Saunders), a medium-sized kind with formidable-hooked spines.

To Primula vulgaris, var. auriculæflora (Dean), a charming variety, the flowers of which are of a rich very dark velvety-crimson, almost inclining to black, in which is set a large yellow eye.

To Primula Violet Gem (Dean), another very valuable Primrose, which bears a profusion of exquisitely pretty blooms of a pleasing violet-crimson colour.

YOUNG GARDENERS' INSTITUTION, ROYAL EXOTIC NURSERIES, CHELSEA.

Messrs. Veitch & Sons, we are glad to learn, have formed an institution having for its object the accommodation and comfort of the young men employed in their establishment. Close to their nurseries they have leased a large and excellent house, the rooms in which are large and lofty and fitted it up to accommodate at least thirty men. One of the largest of the rooms is used as a dining-room, another as a library and news-room, a third as a smoking-room, and those on the upper floors are used as bedrooms. Kitchens, lavatories, and offices occupy the basement. On the south and east sides of this house is a large field, a portion of which is to be fenced in and converted into a suitable recreation ground for the young gardeners; indeed, everything that can in any way tend to their comfort has been considered, and no expense has been saved to procure for them homely and country-like privileges, a boon which young men unaccustomed to town life cannot fail to appreciate.

The President of this Institution is Mr. H. J. Veitch; the Vice-President, Mr. A. Veitch; and the General Committee consists of Messrs. Bause, Canham, Court, Davidson, Davis, Dominy, Heale, May, Seden, Simmonds, Sinclair, Taylor, West, and Wilkins; Mr. P. Veitch is Secretary, and Mr. Manning Accountant. The advantages that belong to this Institution are as follows:—1. Messrs. Veitch will buy all articles of food at the lowest wholesale prices, and supply the young men with breakfast, dinner, and tea, at the lowest cost price, thus giving them all the advantages of better food at less expense than the young men could procure it elsewhere. 2. Each man is provided with a separate bed. 3. A library, consisting of botanical, scientific, and religious works, will be open for their use. Various daily newpapers and all the leading botanical periodicals will be at their disposal. Chess and draughts also provided. 4. There is a good smoking room. 5. Lectures of an interesting and instructive character will be delivered periodically. To include chemistry, botany, garden architecture, the microscope, &c., &c. 6. The house is fitted up with the view of giving home comforts, and arranged so that the young men may spend their evenings in well-lighted, warm rooms, without any undue interference with their liberty. 7. Attached to the Institute there is a recreation ground, where quoits, bowls, and other amusements may be enjoyed.

The following rules and scale of charges have been decided upon by the General Committee, who will act with Messrs. Veitch in endeavouring to secure the comfort of the young men who may join the Institution; and the General Committee will likewise audit the accounts every month. 1. The house will be closed at eleven p.m. every night, excepting on Saturdays, when it will remain open till twelve o'clock. 2. Smoking allowed in the smoking room only. 3. No books to be removed from the Library. 4. No strangers to be admitted to the Library. 5. Every young man on leaving the Institution for a situation to sign his name in the book kept for that purpose.

The scale of charges is arranged so that young men may adopt one of two plans. To those who wish to pay a weekly sum it is proposed to charge 11s. per week, or 1s. 7d. per day, for which lodging, breakfast, meat dinner, and tea will be provided; but if a dinner of bread and cheese is preferred instead of meat, then the weekly charge would be 8s. 8d., and the daily charge 1s. 3d. If, on the other hand, the young men desire to pay for the different meals separately, the following is the scale of charges: For a single breakfast or tea, 4d. (bread and butter, tea, coffee, or cocoa); dinner, 8d. (meat, vegetable and bread); ditto, 4d. (bread and cheese); supper, 1½d. (slice of bread and cheese); beer, per glass, 1d.; tea and coffee, per cup (when extra to meals), 1d. These prices have been fixed at a meeting of the Messrs. Veitch and their foremen, and are liable to alteration and reduction where possible. Messrs. Veitch wish it to be distinctly understood that they have no intention of deriving any profit from the establishment of this Institution, but on the contrary they are willing to contribute towards the cost of the house, with the view of increasing the comforts of young men who may come to their nursery.

MANCHESTER LITERARY AND PHILOSOPHICAL SOCIETY.

At a recent meeting of this Society, Mr. Joseph Sidebotham read a paper "On the Destruction of the Rarer Species of British Ferns," the object in view being to protest strongly against such destruction, and, if possible, to put a stop to it. He mentioned four districts in Lancashire, Derbyshire, Westmoreland, and Wales, and gave lists of Ferns which he had found abundantly in them twenty-five years ago, all of which have now entirely disappeared, or have become exceedingly rare. Since Fern collecting became a sort of fashion a few years ago, a class of people has sprung up who gain a livelihood by collecting and selling Fern roots to tourists; these are exposed for sale in the markets during the summer season, and it is pitiable to see cartloads of them torn from their native rocks and glens, and to think that not one root in a hundred will grow when carried away and planted on rockwork; and the few plants that do survive are but miserable representatives of their respective species. There are laws to protect the small birds from being exterminated, but none can be framed to protect our Ferns and wild flowers. The only suggestions the writer could make to preserve them was to appeal to tourists on no account to purchase roots of Ferns from these dealers, and not to dig up rare specimens when they find them, but content themselves with the fronds. He then enumerated the various native species of Ferns, and showed how few of them were suitable for cultivation in ordinary gardens and rockeries, and that for such a purpose the common species were really more suited in every way than the rarer, being handsomer and more easily grown. He also strongly advocated the growth of varieties from spores, and spoke of the pleasure he had experienced in examining the extensive collection of those raised by Mr. Lowe, of Highfields, near Nottingham. Mr. Hurst mentioned that the Madeira Dicksonia culcita had been eradicated from its sole Spanish habitat, near Algeziras, by collectors.

COVENT GARDEN MARKET.

March 7th.

Flowers.—There is now a good supply of these, both cut and in pots; border plants may also now be had in abundance. Bouquet flowers consist chiefly of Camellias, Azaleas, Cinerarias, Deutzias, Lily of the Valley, Acacias, Hyacinths, Tulips, Narcissi, Violets, Astilbe (Spiræa) japonica, Cyclamens. Chinese Primroses, scarlet Pelargoniums, Cytisuses, Mignonette, and Rosebuds, For bouquet making white flowers are chiefly in demand, but the intense blue of the Cineraria and the brilliant colour of the scarlet Pelargonium seem also to be favourites for making striking contrasts.

Fruit and Vegetables.—Apples and Pears are now almost entirely confined to those of foreign growth, but they are not keeping well. Grapes are good, and equal to the demand; and of Strawberries there is a moderate supply. Amongst vegetables there are some frame Carrots, and excellent salading; the commoner vegetables, too, are of first-rate quality. From Paris we have some fine Asparagus; and English-grown produce is also now fast improving. Forced vegetables are still good and plentiful, and Rhubarb is now obtained in limited quantities from the open air.

Prices of Fruits.—Apples, per half sieve, 3s. to 5s.; Chestnuts, bushel, 12s. to 20s.; Cobs, per lb., 2s. 6d.; Grapes, hothouse, per lb., 4s. to 10s.; Lemons, per 100, 6s. to 10s.; Oranges, per 100, 4s. to 10s.; Pears, kitchen, per doz., 3s. to 6s.; dessert, per doz., 8s. to 12s.; Pine-Apples, per lb., 6s. to 10s.; Strawberries, per oz., 1s. to 2s.; Walnuts, per bushel, 15s. to 30s.; ditto, per 100, 2s. to 2s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 5s. to 10s.; Beans, Kidney, per 100, 2s. to 3s.; Beet, Red, per doz., 1s. to 3s.; Broccoli, per bundle, 9d. to 1s. 6d.; Cabbage, per doz., 1s. to 1s. 6d.; Carrots, per bunch, 6d.; Cauliflower, per doz., 2s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 2s. 6d. to 4s.; Cucumbers, each, 2s. to 4s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 2d.; Lettuces, per doz, 1s. to 2s.; Mushrooms, per pottle, 2s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 3s. to 6s.; pickling, per quart, 6d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 4s. to 8s.; Potatoes, per bushel, 4s. to 7s.; Radishes, per doz. bunches, 1s.; Rhubarb, per bundle, 1s. to 2s.; Salsafy, do., 1s.; Savoys, per doz., 2s. to 3s.; Scorzonera, per bundle, 1s.; Seakale, per basket, 1s. to 2s.; Shallots, per lb., 3d.; Spinach, per bushel, 3s. 6d. to 5s.; Turnips, per bunch, 3d.

How to Preserve Fungi.—It is sometimes desirable to preserve specimens of Fungi for future or more convenient examination. For such purpose the following mixture has been recommended: sulphuric acid, 2 pints; water, 8 pints; mix and add creosote, 1 pint. Bottle the Fungi in this and cork tightly. It is said to preserve them perfectly, without change of colour. Fungi may be preserved by drying, by bedding them in silver sand, gills upward, in tin boxes, and placing them in a slow oven for two or three hours. [Of this mode of preserving Fungi, we have had no experience. They may be very well preserved in spirit if required, or good bye as to the "colour;" the preservation of this is, however, generally quite unnecessary. —W. G. S.]

The Indigo Trade.—In 1870 the declared value of indigo imported was £2,721,208; in 1871, £2,932,238; and last year, £2,478,967.

THE GARDEN.

> "This is an art
> Which does mend nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

EARLY-FLOWERING SHRUBS AND TREES.

When they come to be reckoned up, how large is the number of shrubs and small trees which we possess that produce gay, or at all events pleasing flowers in the earliest days of spring! Not half the use has yet been made of them that might be; the Evergreens have had it almost all their own way, as if there were nothing besides, and every one, no doubt, is glad to see the Evergreens shining, as they do, even in the snow of winter; but even they would look the better were early blooming deciduous shrubs intermingled with them deliberately and judiciously. By the exercise of a little skill in planting, the presence of the deciduous shrubs would interfere not in the least, and as soon as in bloom, the Evergreens would receive new beauty from the companionship, at the same time that in reciprocity of good service they helped to bring out the merits of what was leafless. We say "companionship" rather than contrast, for, depend upon it, the *beau-ideal* of horticulture, like that of well-ordered society, comes a vast deal more surely and readily of natural harmonies than of contrasts, let the individual merits of the contrasted things be ever so high; and what we have most energetically to consider is, not how things will best antagonise, but in what way they can be made most exquisitely and unaffectedly to blend. Two, or even three classes of the early-flowering arborescent plants may be established, but for our present purpose it is unnecessary to speak of any but the first, excepting in simple mention of the principal names. Possibly even the list of those we omit may have its value, since until some one points it out, even the most ordinary fact now and then eludes our notice. The hardest thing in the world to see most plainly is very often that which lies at our feet. The early-flowering shrubs, then, which do not belong to the section we purpose speaking of, are the self-excluded, through being evergreen as well, the Laurustinus to wit, the Garrya elliptica, the common Mahonia, the Spurge Laurel, the early crimson Rhododendron, the Erica carnea and its varieties (Mediterranea, &c.), the early blooming varieties (or, perhaps, they are only individuals) of the common Furze, and a little later in the season the Cherry Laurel. These plants are all intrinsically so good in their flowers that they ought to appear abundantly in every spacious pleasure ground—the Spurge Laurel, if not showy, because of its delicious evening perfume, and the Garrya as the best thing nature ever devised for table epergnes. There is no occasion, however, to dwell upon them, since the greater portion are nearly universal, and need no eulogy, speaking, as the ladies do, for themselves. Nor is there any necessity for more than the bare mention of those charming and mostly old-fashioned things (equally meritorious, if we are sensible enough to take them *per se*), which present their flowers in company with the opening foliage. How beautiful in this department are the Pyrus, or more properly the Cydonia japonica; the Canadian Amelanchier, which seems a snow-shower caught *in transitu*, and changed to petals; the Larch, with that inimitable blending of tenderest green in little sheaves, and infant cones of loveliest pink; and though last, not least, the Apple tree, the Garland Crab (Pyrus coronaria), the wild Cherry, and several others belonging to the Pomiferæ and the Drupiferæ, those two capital families which seem at a loss whether to prefer poetry in the way of bloom, or substantial prose in the shape of fruit. Not last, after all, for we have skipped that every man's treasure—the Ribes sanguineum. Many who read these lines will remember with ourselves how horticulture clapped its hands when the Ribes became properly known, and its hardiness and easiness of multiplication were established. North-west America may have many more admirable contributions awaiting our gardens, but to beat the Ribes sanguineum will be hard. It may not be amiss to invite attention, while the plant is before us, to the very curious phenomena observable in the flowers when double. Ordinarily, when flowers become double, the stamens either disappear entirely, or they hold only the uncomfortable half-and-half kind of existence so conspicuous in the double Snowdrop. Here, however, in the Ribes sanguineum, everything is multiplied and everything is perfect! Mark too, young botanists, for these particulars all have their practical value, how very beautifully the transition is shown in the Ribes sanguineum, from the ferules which form the outer layers of the leaf-buds upwards into the perfect leaves themselves. A florist and botanist can hardly help being allured into the byeways, sincere as may be his intention when he starts upon his journey, to keep to the highway, and thus have we got a little astray, but it is precisely the same class of travellers who can recover themselves most readily; they, of all others, know least of the tragic "*sed revocare gradum.*" So looking to the deciduous early spring-flowering shrubs and trees, let us remark what a pity it is that the Cornelian Cherry (Cornus mas) is not more frequent. While everything is still bare of foliage, its slender twigs are densely clothed with knots of golden yellow, just about the same size as the flower-knots of the Elm, which are themselves no slight ornament to the tree as soon as the anthers have become protruded, giving it, when the sun shines, a shade of purple. Of the same bright yellow are the flower clusters of the Hamamelis, a tree very seldom met with, but eminently deserving, and of the fitness of which for our shrubberies there can be no question, since it endures the severe winters of New Brunswick. The Paulownia, unhappily, is too tender for the midland and northern counties of England; but what can be more splendid than the display it makes in April, in the south, pouring out grand violet-blue flowers fashioned like those of a Foxglove or a Gesnera, and aloft among the branches. It is from the same fertile country which was the birthplace of the Paulownia that England originally received that sweet and most dainty thing, the Japanese Chimonanthus fragrans, peer of the Mezereon in its fragrance, and commencing to bloom in February. The Mezereon has the advantage of it in point of colour, and is excellent, as every one knows, as a little standard; but there is a delicacy about the Chimonanthus, although relatively much less hardy, which enables it to hold its own anywhere; and, for minute examination, the amber and chocolate of the blossom are unique. Need we speak of the Almond, the Plum, the Sloe—one of the whitest flowers in nature—or of the Peach, or of the Apricot? Though the rude gusts that toss their blossoms to the Primrose render it hazardous to depend upon them as ornamental trees, there is always the chance of fine weather while their flowers are out, and the average of seasons is pretty sure to be not unfavourable. What beautiful plants, again, are the Forsythia viridissima and suspensa! Like the winter-flowering Jasmine (Jasminum nudiflorum), they may be everybody's, and against a wall become perfect sheets of brilliant yellow, excelling everything except the Laburnum, that in this partiuclar colour is the enrichment of a later season. The Almond has a rival in the Judas tree (Cercis siliquastrum), another of the too-seldom-planted ones, though so splendid in its profusion of rosy flowers, shaped like those of the Furze, and springing from the naked old wood. We have seen this tree, when not large, not less completely enveloped in blossom than are the twigs of the Mezereon. Finally, there are members of the Amentiferæ, that confer surprising beauty on the pleasure-ground when carefully placed; not to mention the familiar Sallows, loaded with large yellow catkins, and ensuring that pleasant sound, the hum of early bees; and not to mention the Hazel and the Filbert, dressed all over with these elegant pendants, that give their "touch of beauty" even to the hedgerow-nuts; there are the Poplars, in several kinds, and the Alders, in at least two or three. While the trees are comparatively young, the catkins of these last are exceedingly conspicuous. Everyone who has learned to love trees loves the catkin-bearers, and none that grow surpass the Alders in power of wooing towards the amiable pastime, to indulge in which, moreover, is a positive benefit to mankind, since demand for handsome trees implies demand for good tree-providers, and good tree-providers have to think steadily before they act.

NOTES OF THE WEEK.

—— Our able correspondent, Mr. George Gordon, is at work preparing a new edition of his excellent book, the "Pinetum."

—— In Mr. Wrigley's magnificent collection of Orchids, at Bury, Lancashire, amongst other things at present deserving notice are nine finely-flowered plants of the beautiful "drawing-room Orchid," Lycaste Skinneri. These plants are by no means large, yet they have produced a total of 122 blooms on fourteen flowering bulbs.

—— A Potato grower at Fontenoy considers that he has found a remedy for the Potato disease. At planting time he surrounds each Potato with a small quantity of waste tan, which is easily obtained, and of small general value. For three years he has done this with entire success, his Potato crop being now perfectly sound, though in former years, in the same field, it was diseased.

—— There are at present in flower in the nurseries at Coombe Wood several beds of the beautiful new Rhododendron, Early Gem. This pretty little Rhododendron is a hybrid between R. præcox and R. davuricum atro-virens; its habit is dwarf and compact, and the blooms, which are large and of a rosy purple colour, are produced in great profusion from towards the end of January throughout February and March. It is admirably suited for forcing purposes, as, on account of its natural tendency to bloom early, it does not require much excitement to induce it to develop its flowers.

—— We understand that at a meeting of the Veitch Memorial Trustees, held the other day, it was resolved "That the Veitch Memorial prize be offered triennially, commencing with the present year; and that until the fund reaches the amount of £1000, the interest accruing in the two intervening years be added thereto." It was also resolved "That steps be taken to procure designs for a Veitch Memorial Medal, with the view of having the same executed, for use, if possible, at the forthcoming show of the Royal Horticultural Society at Bath," it being an instruction to the trustees that an inexpensive medal should accompany the money prizes distributed.

—— We learn from the *Journal of Botany* that Dr. Ernst, of Caracas, has been named by the Government of Venezuela to fill the chair of botany in the University of Caracas, where natural history has hitherto never been taught. He is likewise commissioned with the foundation and management of a small botanic garden and its corresponding botanical museum. For the garden he will have the two large yards of the University building, both of which are over 1,500 square yards in area, which will give about 930 square yards available ground for planting.

—— The town of Leamington has just lost a good friend by the death of Mrs. Willes, of Newbold Comyn, a property which the family has possessed since the time of Henry VIII. The late Mr. Willes presented to Leamington the Jephson Gardens, which he laid out, giving up land worth nearly £30,000 for the benefit of the inhabitants. He also presented sites for several churches, and to him the town owes the combination of squares, terraces, streets, and gardens, which extend from the canal, near St. Mary's Church, to Beauchamp-square and the Newbold Hills. He and Mrs. Willes also reserved several other valuable plots to be kept open for ever.

—— At a meeting of the subscribers of the Royal National Tulip Society, held at Manchester after the annual show last year, it was unanimously resolved that the exhibition for 1873 should be held in Birmingham. In accordance with this resolution, the first meeting of this society for 1873 will be held at 96, High-street, Birmingham, on Saturday evening next, at six o'clock. All lovers of the Tulip will be pleased to learn that the prospect of success this year will bear a favourable comparison with that of any former period. Every effort should be made by growers and their friends to contribute to the funds of this society, to ensure a success worthy of its patronage and support. Subscribers and others are requested to send in their names, before the day of meeting, to Mr. James P. Sharp, Rose Cottage, Nechells-place, Birmingham.

—— An important sale of Orchids and other plants belonging to Messrs. Backhouse, of York, took place at Stevens', last week. It consisted of both established and newly imported plants, foremost among the latter being the rare and beautiful Oncidium tigrinum, a description of which will be found in another page. A grand mass of this, consisting of upwards of thirty "bulbs," in splendid condition, fetched no less than £20, and smaller plants of the same realised from £3 10s. to £12. An extra strong flowering plant of Oncidium macranthum was sold for £9, and other good plants of the same Oncid fetched from £3 12s. 6d. to £7 10s.; imported plants of O. Barkeri realised from 3 guineas to £5. Of Odontoglossum Bluntii, some wonderfully fine plants were disposed of, one of which fetched £7, another £6, and several 5 guineas each. Plants in flower of the true Odontoglossum roseum realised from £4 10s. to £5 5s. respectively; whilst a strong plant of O. Reichenheimii fetched £5 10s., another £3 7s. 6d., and one of the true O. Rossii majus, with thirty-five bulbs and seven shoots, £5 15s. A very fine variety of O. Insleayi, with high-coloured flowers and broad, heavily-spotted sepals and petals, realised £5, and lesser examples of the same Odontoglot from £3 3s. to £4 10s.; a fine mass of O. citrosmum fetched £3 10s. A strong plant of Cattleya Mendelii fetched £10; masses of C. citrina, with 150 bulbs, realised £7 10s.; another, with 100 bulbs, £7 7s.; a fine variety of Disa grandiflora fetched £4. Trichopilia fragrans realised from £3 7s. 6d. to £4 15s. A fine specimen of the pretty Adiantum Farleyense, with thirty fronds, fetched £10. The proceeds of the whole sale, which consisted of 381 lots, amounted to £933.

—— We are glad to announce that Mr. J. C. Mansel-Pleydell's "Flora of Dorsetshire" is in the press.

—— The Halifax Floral and Horticultural Society will hold a grand spring exhibition on Whit Monday and Tuesday, in the grounds at Craven Lodge, Halifax. The schedule of prizes is now being distributed.

—— We understand that Mr. Bull intends exhibiting at the spring show of the Royal Horticultural Society, to be held on Wednesday and Thursday next, a large collection of plants, including several new kinds of Encephalartos, Cycas, Macrozamias and Zamias.

—— In a recent number of the *Times* we read of the decease, on February 21, at Naples, of M. Max Nisson, aged fifty-four. M. Nisson was a great lover of plants, and was a constant attendant at the International Horticultural Congresses. He was one of our foreign guests in 1866, and paid a visit to this country last year.

—— The new strip of garden belonging to the Zoological Society on the north side of the Regent's Canal, is now being put into order. The bridge over the canal is already finished, and the new lodge opposite Primrose Hill only wants the entrance gates and turnstiles to make it complete. We understand that it will be open to the public on Easter Monday.

—— The Islington guardians have been lately making use of a machine for peeling the Potatoes used by the inmates, and it is said to be so very useful and economical that 9s. a day is saved to the rates by its use. The guardians of the Holborn Union, on these facts being brought to their notice, have ordered a similar machine to be supplied to each of their three workhouses.

—— In reference to the forthcoming exhibition at Bath of the Royal Horticultural Society, it may be mentioned that the local committee are actively at work. The schedule of prizes will shortly be published, and will be found to be far in excess of that of any previous exhibition of the society. Applications will be made through influential channels to induce the Prince and Princess of Wales to inaugurate the opening on the 24th of June, and there is every probability of success.

——Mr. H. C. Watson intends to print a selection from the materials collected in years past to show the distribution of British plants through the different counties, and has issued a circular to English botanists requesting them to send any facts additional to those recorded in the "Compendium of the Cybele Britannica" and its Supplement, so as to render the enumeration as complete as possible. We cordially second his appeal, and congratulate British botanists on the prospect of so useful a book.

—— The temperature of February this year (says *Nature*) has shown some very curious peculiarities, and a marked contrast to that of the earlier part of the winter, as may be seen from Mr. Glaisher's tables of observations at Blackheath. While, during the whole of the three preceding months, there were only twelve frosty nights, with the temperature of the twenty-four hours almost uniformly above the average of the last fifty years, the thermometer fell below the freezing point in eighteen nights in February, and the temperature was below the average on every day except two, the total depression on the month being 4°·3 Fahr. The records of very few winters will show so high a minimum as 25°·0 Fahr., the lowest temperature of the past winter at Blackheath, which occurred on February 24 and 25, the thermometer falling below 30°·0 on only seventeen nights during the whole winter. Since March 2 the temperature has been again uniformly above the mean.

—— We are much pleased to notice the introduction of a new yellow-flowered Columbine (Aquilegia leptocera lutea), which is thus described in the catalogue of Messrs. Backhouse and Son, York, just received by us:—"This is unquestionably one of the finest perennials we ever introduced. Its large golden-yellow, long-spurred flowers are produced in great abundance from densely-tufted plants, which maintain a long succession of bloom. This species has not yet flowered with us; but magnificent dried specimens of the blossoms have been forwarded to us from North America. These are not unlike very large examples of A. cœrulea, with long straight horns. So far as we can ascertain, this plant has nothing whatever to do with A. aurea of Roezl, of which the flower is scarcely half the size, of a sulphur yellow shaded with green."

THE INDOOR GARDEN.

RHAPIS FLABELLIFORMIS.

THIS, as our illustration suggests, is one of those plants that are indispensable in warm conservatories planted in the natural style; for ornamenting the margins of water, or for the embellishment of a small island, nothing could be more striking or appropriate. It is fond of water, and will stand more rough usage in the way of transplanting than any other Palm with which I am acquainted. For vases in rooms too it is admirably adapted, and it is exceedingly useful in the subtropical garden. Being a native of China and Japan, it will stand a moderate amount of cold. As a general decorative plant it has this advantage, that it never grows larger than from 8 to 10 feet in height, and it can be increased by divisions of the roots. In this operation make a clean cut and place the young plants in bottom heat until they have got established.

Rhapis flabelliformis.

From this plant are made the smart little rattan canes which one often sees in shop windows, part of the root being formed into a knob or head; they are very hard and strong, and when polished nearly black. J. CROUCHER.

CULTURE OF THE CHINESE PRIMULA.

(P. SINENSIS FIMBRIATA.)

THIS belongs to one of the most popular and interesting groups of winter and early spring flowering plants that we possess; and from the ease and freedom with which it can be cultivated and increased, combined with the great variety, richness, and purity displayed by its flowers, which are produced in the greatest profusion, it is alike suitable for the embellishment of the conservatory, greenhouse, drawing or sitting-room; and, moreover, it may, with ordinary care, be grown by all possessing a few square feet of glass. This Primula may be readily increased by means of cuttings made of the side shoots, or by divisions; but, except in the case of double varieties and scarce and novel types, these modes of increase are but seldom resorted to, as, by taking ordinary care to prevent promiscuous fertilisation (which generally results from the action of bees), it reproduces itself true from seed, which should be sown annually; it therefore becomes important to secure seed from the very purest "strains," or disappointment may possibly be the result. I find the P. sinensis fimbriata rubra strain to be by far the best when subjected to gaslight, such kinds as Kermesina or Splendens, which is bright, fiery crimson by day, being poor and washy, in comparison with the former, under artificial light. Several of the whites are of peerless purity, and most effective for all decorative purposes; it would therefore be invidious to specify particular types.

SEED SOWING.

The time for sowing should be regulated according to the period at which it is desirable to have the plants in bloom. For autumn and winter flowering, where the object is to have as large plants as possible, the seed should be sown about the middle of February, certainly not later than the first week in March. Equal parts of sandy loam, peat, leaf-mould and sand passed through a quarter-inch sieve will be found a suitable compost, and the seed pots or pans should be amply drained; at this dull period about one half of the depth should be filled with crocks, which may be covered with a layer of the siftings, filling in the compost to within half an inch of the top, pressing it moderately firm and leaving the surface perfectly smooth. Presuming that the soil has been used in a healthy state as regards moisture, a slight watering from a fine rose will be sufficient; then allow the pots to stand until the soil has become somewhat dry before the seed is sown, and cover it slightly with compost put through a fine sieve; merely cover, in short, sufficiently to hide the seed, settling it down by means of a gentle watering; afterwards plunge the pots in a propagating bed in a temperature of about 75°, and shaded from the sun, when the seeds will quickly germinate.

TREATMENT OF THE YOUNG PLANTS.

These must have prompt attention immediately they push through the soil, removing them to a position near the glass, free from stagnant air, to prevent damping off, and to promote a sturdy habit, being careful in watering to wet the tender leaves as little as possible; as soon as the plants get sufficiently strong to handle nicely, if convenient space is at command, they should be potted off singly into the smallest sized pots, and failing these prick them out into seed pans, using the same compost as recommended for the seed; place them in a pit or frame with a genial temperature, and they will make rapid progress, admitting air in proportion to the strength of the plants, which must be screened from bright sunshine. When the pots have become filled with roots progressive shifts may be given; for ordinary purposes six or seven-inch pots will be sufficiently large, using more loam in a rougher state as the plants get stronger. If the soil is not in sufficiently good heart, it will be necessary to enrich it with thoroughly rotten manure which has been dried and freed from worms. A free system of drainage must at all times be secured, as Primroses of this class are impatient of stagnant water.

SUMMER TREATMENT.

Primulas naturally delight in moderately shady positions, *i.e.*, they should be screened from the mid-day sun; and to ensure that important object no better site can be chosen for them during the summer months than the north side of a hedge or wall; they should be set in an ordinary frame, to which air should be admitted on every favourable occasion. When the plants have become thoroughly established in their blooming pots, the lights may be entirely removed at night during mild weather, but in doing this care must be taken not to subject them to heavy rains, as the foliage quickly suffers from any excess of water hanging upon it. In watering, too, care should be taken to wet the leaves as little as possible, promoting humidity in the atmosphere by freely sprinkling the material on which the plants are standing in preference to syringing overhead. Water carefully at the root, guarding against any excess which the plants cannot take up. Weak liquid manure-water will be beneficial when the flowering pots are full of roots, and more particularly during the time when they are throwing up flower-heads. Remove the bloom-buds as they appear until such time as the plants are wanted to bloom, an operation which will greatly strengthen them. They are easily injured by being subjected to cutting draughts, which should at all times be studiously avoided. A moveable shading should be provided, to screen them from bright sunshine, and for this purpose nothing answers better than a piece of scrim-cloth attached to a round piece of wood or roller a few inches longer than the lights. This can be rolled on and off by one man with greater facility and more neatly than a loose covering, more particularly where several lights have to be covered in one length. Whitewashing the glass and such permanent means of subduing the glare of the sun are objectionable, as they are sure to engender an enfeebled constitution in the plants.

SUCCESSIONAL SOWINGS.

A successional sowing should be made in June for spring flowering, and as the weather is then hot and dry, it is advisable to water as little as possible before the seeds germinate. The soil should be kept an inch and a half below the rim of the pot, over which a piece of glass should be placed and a covering of moss, which should be kept constantly wet. This will facilitate germination; artificial heat at this time of the year is unnecessary.

LARGE SPECIMENS.

Where it is desirable to have as large plants as possible for conservatory embellishment, the late flowering batch form the best subjects for effecting that object; slightly rest them for a short time after blooming, previously to potting them; afterwards shake them out and repot, keeping them close and shaded from sunshine till the roots have been brought into action, gradually inuring them to air, and potting them on as required. Such plants make splendid specimens, which flower early and freely.

DOUBLE VARIETIES.

These are most profuse bloomers, and where cut flowers are largely in request during winter, they are invaluable, as the blooms stand longer and better than those of the single sorts. They are, moreover, grand subjects for bouquets, when attached to wires in the form of single blossoms. Upon the whole they are less robust in constitution than single kinds, but they may be treated, as regards general management, much as detailed above; they strike freely from cuttings taken after blooming, placed in bottom heat, and kept close until they have struck root.

HOW TO PREVENT DAMPING OFF.

It may be mentioned that to be perfectly successful in blooming Chinese Primroses during the dull months of the year, it is important that they should be afforded a light, airy position near the glass. A lattice-work stage is the best possible support on which to set the plants, admitting, as it does, the air to pass freely amongst them, whilst at the same time there is no chance of water hanging about them; the best temperature for them is one averaging about 45°. In low localities extreme difficulty is often experienced in preventing them from moulding-off in the absence of an arid atmosphere. G. Westland.

Witley Court, Worcestershire.

CAMELLIAS PLANTED OUT.

Those who have seen such magnificent Camellias as those in the nursery of Messrs. Pince & Co., of Exeter, in the gardens at Bicton, at the late Mr. Byham Martin's, at Kingston, and other places, must admit that, however useful and beautiful Camellias may be in pots or tubs, their true grandeur and magnificence can only be brought out in the open border of a conservatory. It is indeed surprising how seldom we meet with Camellia-houses pure and simple, even in the best places; and yet the value of the Camellia was appreciated before that of almost any other plant. Most of the old gardeners had a Camellia-house and an Orangery, or one house which served for both. These were mostly gloomy architectural structures, in which the plants pined and died. Then came a description of glass houses, which, unshaded, admitted too much light, and until our ventilation and means of charging the atmosphere fully with vapour are much more perfect than they are, it will assuredly be found that shade, or what amounts to nearly the same thing, a considerable distance from the glass, is essential to the perfect health of Camellias. They need no shade when expanding their blooms in the dead season; but if late flowers are wanted, they will last longer, and be also more beautiful while they last, if they are shaded from the sun from twelve to three after the 1st of March; when in full growth, too, partial shade in an atmosphere approaching saturation assists them greatly. It follows, therefore, that the heaviest roofed houses in the garden will grow Camellias very well. I have even seen fine specimens beneath a plastered roof; but I would not recommend such a one. A roomy, lofty span-roofed house, with a moveable roof, would be best. The entire sides should likewise be capable of being moved for ventilation, as air in motion in sufficient volume is one of the surest antidotes against leaf scorching or burning.

As to soils, the different kinds that have been recommended have been well nigh endless. One of the surest signs of horticultural progress in these times is the general condemnation of complicated nostrums or composts. Now, three soils complete our curriculum—peat, loam, and leaf-mould; and a great many dispense even with the latter. These, with the addition of sand, are all we want. Some of the best Continental as well as English growers grow their Camellias either in peat or in loam. Some declare the one best; some the other; and equally good plants have been grown, and still are grown, in both; and even fine Camellias have been grown in a mixture of both; but such a mixture I do not recommend. The best Camellia soil is turfy loam full of fibre, cut only about 2 or 3 inches thick, broken up and mixed with about a sixth part of sharp silver sand. Camellias root in this rapidly, and form wood and leaves and flowers of surpassing health and beauty. Peat of the same turfy character answers equally well, and, therefore, I see no good in mixing the two together. As for cow-dung—fresh or rotten—and all other stimulants, don't use them. Camellias like rich food when they are growing freely; give it to them daily in their drink—house sewage, manure-water—natural and artificial—from the drainage of the farm-yard and soap-suds to pigeon's dung and guano-water. Weak and often should be the rule, though Camellias will bear stronger doses of manure-water than most plants.

A border from 2½ to 3 feet deep of turfy peat or loam, with a few inch bones and bits of charcoal, and resting on 6 inches of open drainage, suits Camellias well. Even for top drainage I should give only more loam and turf. The drainage may seem excessive, but it is not. Camellias can hardly have too much water given them when growing freely; yet stagnant water ruins the plants, and causes bud-dropping instead of promoting their opening into flower.

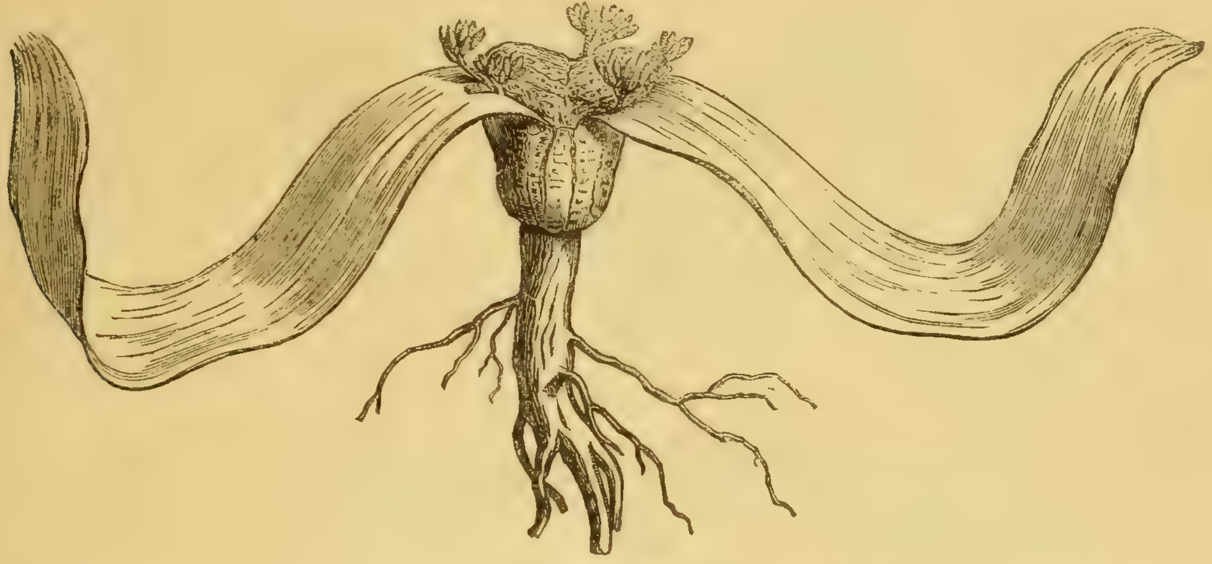
In planting, the roots should be disentangled as much as may be required without breaking them, and the soil should be made as firm around them as can be done with the hand. The more the balls are matted, the firmer must the earth be made, else the roots may fail to get hold of the fresh earth. Water thoroughly after planting, to consolidate the earth, and settle the roots into their new home. During the growing season it is impossible to keep the air too moist. Send a deluge over the plants two or three times a day by means of an engine hose. This will encourage growth, promote strength, and ensure cleanliness. After the growth is matured, the plants cannot be kept too cool throughout the summer. If unroofed, care must be taken to guard against any sudden rise of temperature when the glass is put on in the autumn. Any sudden change is apt to loosen the flower-buds, and once this is done, no power or skill can tighten them again.

As to varieties, it is almost invidious to pick and choose among Camellias. Jubilee is, however, my favourite for beauty, and Pergia for forming a tree or covering a wall with the utmost despatch. It also bears a noble flower. The Double White, Fimbriata, Lady Hume's Blush, Marchioness of Exeter, Bealii, Countess of Ellesmere, Cup of Beauty, De la Reine, Double Red, Elegans, Chandleri, Formosa, Tricolor, and Fulgens are a few, at once beautiful and cheap. There are an immense number of newer kinds, some of them larger and more beautiful than these, but the above will disappoint no one, and those who intend to purchase novelties or to invest largely in Camellias should first of all visit some of the largest nurseries now when the plants are in flower. In cases in which this cannot be done, I will add a few more names, mostly of old varieties, but of such as are good and cheap, viz.: Augustina superba, Aurora, Comtessa Lavinia Maggi, Bonomiana, Jenny Lind, Imbricata, Mutabilis, Monarch, Mathotiana, Rubens, Valtevaredo, Triumphans, Saccoi nova, Candidissima, Jeffersoni, Leopold I., De la Reine (red), Elegans Chandleri, Napoleon III., Prince Albert, Perfecta, Queen of England, Wilderi, Princess Marie, Countess of Orkney, and Reticulata, (single and double).

D. T. Fish.

WELWITSCHIA MIRABILIS.

This is one of the curiosities of that curiosity-producing country, Western Africa—though as yet we have but little knowledge of what treasures may be locked up in that vast unexplored territory. It was first discovered by the late Dr. Welwitsch on the plateau of the Benguela coast, in 15° 40′ south latitude. It has also been found by Mr. Bains in Damara Land. It is related to the Coniferous tribe, and bears clusters of cones like those of the common Larch. The leaves resemble long, broad strips of leather, and are composed entirely of strong fibre, not unlike uncombed Hemp. The roots, which descend deep into the sandy soil, form when dry quite a mass of stringy fibre. The body or trunk resembles a gigantic fungus or roughly made bench, with a suture crossing the centre somewhat like a miniature valley, the two sides of which rise slightly to the margins, where the growth is made. If the plant could be got in quantity, its fibre would doubtless be useful for cordage. It is to be regretted that at present this singular plant is not in cultivation, a circumstance doubtless owing to its not being a plant likely to meet with a ready sale; and to our botanic gardens having given up the introduction of new plants. If introduced it would doubtless grow freely in a dry and moderately warm house. One cannot but be surprised that this odd-looking plant should ever have been thought worthy of the specific name "Mirabilis." Vegetable monster, many may think, would have suited it better.



Welwitschia mirabilis.

J. Croucher.

Oncidium tigrinum (Llav).—This magnificent Orchid, which is the long sought "Flor de Muertos" of the Mexicans, has at last been discovered by the collector of Messrs. J. Backhouse & Son, of York, by whom magnificent plants of it have been recently received. In the wild state it usually bears from 10 or 15 to 50 flowers on branching spikes, 2 to 4 feet long, while luxuriant specimens appear sometimes to produce 100 or more flowers. The individual blossoms are 3 inches across; the labellums are pure sulphur yellow, while the sepals and petals appear to be of a deep yellow, heavily blotched and barred with rich purplish or brownish crimson. The collector speaks rapturously of the beauty of a spike of 47 flowers expanded at his side while writing. Judging by one of the specimens received, the species forms doubly compound spikes when very luxuriant. The blossoms have a close affinity in general appearance with those of Oncidium splendidum and exhale a delightful perfume like that of Violets.—*Beta.*

Daphne indica rubra.—This fine old greenhouse and conservatory plant blooms during the winter and spring months, when its exquisite fragrance is quite delightful. Daphnes are better on their own roots than otherwise, as grafted plants are short-lived. When planted out I have had this fine Daphne cover a long side wall in an orangery, where, during spring and early summer, the amount of trusses cut from it was perfectly marvellous, and the gentle moist heat to which the Orange trees were treated in spring suited the Daphne admirably. Those who intend planting out Daphnes in their conservatories must bear two things in mind; the first is thorough drainage, and very little space must be allowed for the roots to run in; the soil to be used should consist of good, rich, turfy loam and peat, in the proportion of about two parts of the former to one of the latter, adding to this a small portion of sand and a little broken lime rubbish; the soil should be made firm. These remarks will apply equally well to Daphnes grown in pots, for at no time, or in any position, should they be allowed much pot room; neither should the drainage be suffered to get out of order. If the pots are full of roots, a little weak artificial manure applied occasionally will be found very advantageous.—*Farmer.*

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Vanilla.—During the year 1871, 17½ tons of Vanilla were exported from Reunion, and we are told that "the extravagant prices lately obtained for this article have much stimulated the cultivation," so that it is probable much larger quantities will be grown and exported than hitherto.

Arpophyllum giganteum.—This is a beautiful plant, the leaves of which are 2 feet long, and are borne on slender pseudo-bulbs. The flowers are deep rosy purple, small, but densely and symmetrically arranged on cylindrical spikes from 12 to 14 inches long. When well grown the plants flower freely, and form objects of singular beauty. They grow freely in fibrous peat, one-third turfy loam, freely interspersed with lumps of fresh charcoal, and an abundance of crocks. They like plenty of water when growing.

Campanula garganica.—This pretty dwarf species, with its bluish-purple flowers and tinted white centres, is rapidly becoming a charming object cultivated in pots in a cool conservatory. I find that if planted in good soil in 32 or 24-sized pots, the plants will do well for two or three years without the necessity for being repotted. Mingled with pots of the early white Roman Hyacinth and other spring-blooming plants, this attractive dwarf hardy Campanula supplies a hue of colour I should not otherwise possess, and, as it is a continuous bloomer, the dense mass of flowers which it affords lasts for a considerable time.—R. D.

ROMAN HORTICULTURE.

THE particular processes followed by the ancients, or, not to go further into antiquity, by the Romans, when at work in the orchard, the vineyard, or the kitchen garden, of course were very simple. The former are detailed at length by Columella, and are noticed, more or less copiously, by Pliny and Virgil; but concerning garden operations they have very little to say. The most interesting circumstance connected with the cultivation of the Vine was that of its being usually led into a tree, an Elm having the preference, so that allusions to the "marriage" of the two become frequent in the classical poets; while the Plane, which was never so employed, received the name of Cœlebs, or "the bachelor." Digging, raking, seed sowing, clipping, must needs be much the same everywhere; it is only when we come to the fine arts department of horticulture—budding, grafting, inarching, pruning, training (as practised with wall-fruit trees), forcing, and so on, that there can be much to distinguish the practice of nations; and these were precisely the horticultural exercises in which the Romans did not shine, partly because of their want of physiological knowledge, partly because their fine climate anticipated so many of the exigencies felt in the north. The lovely climates of the edges of most of the countries washed by the Mediterranean rendered horticulture, 1,800 years ago, the same as now, in those parts, in many respects a sinecure; and the same, no doubt, is one of the chief explanations of the fact that horticulture as an art invariably makes more progress where the skies and the atmosphere are ungenial than where benignant. Under the influence of kindly ones nature does so much of her own accord that the gardener can afford to dispense with artificial aids, even if he thinks of them. When speaking of Rome, and more particularly of Italy, as a seat of delightful climate for the horticulturist, and one that is less of a stimulus to his ingenuity than England—the Western side alone is to be understood. The provinces next the Adriatic are very different, since they lie exposed to the cold winds from the north-east, without a ridge of Apennines to protect them. The Italy of history and the Italy of invalids consists almost wholly of the western side, where, too, we must look for its celebrated cities—Rome, Naples, Florence, Pisa, Genoa, and Salerno. We may understand the matter quite well from the condition of things in different parts of England. Compare, for instance, Lancashire and the Isle of Wight; or the gardens in the suburbs of Manchester, where the Arbutus and the Bay tree get cruelly put to death before they can attain the height of a man, with the southern coasts of Devonshire and Cornwall, where the Myrtle and the Eucalyptus stand the winter unscathed. After all, it is better for the spirit of a true gardener that he should live where nature has to be conciliated than in a region where he has only to accept and enjoy indolently. Bananas that in India come of themselves may be good, but Grapes and Peaches that have to be enticed are the real benefactors.

Another thing tended to the depression of horticulture as an art with the ancient Romans. The national taste lay in the excitement of great victories and grand spectacles, like those of the Circuses. The fancy was not for the sweet and peaceful pleasures of the garden, since these consist, in reality, of thoughtful and scientific work. A garden rightly used is to a horticulturist what his "study" is to a literary man,—a place which implies the calling forth of the best features of things, watching, waiting, and experimenting. Pleasures like these, so alien to warfare and uproar, the Romans did not care for, though, as we have seen, they liked well enough the idea of rural retirement, and to be quiet at a country seat where there was nothing to do. But the calm of an artificial and unsuggestive garden is a very different thing from the inspiring tranquillity of one to which a man resorts because full of plants that he loves and lives with. The capacity for this description of plant-love was precisely that in which the Roman failed. He was not to blame; the spirit of his age denied it him, but he was none the less the loser. The Roman did not understand, as every gardener worth the ennobling title does now-a-days, that a garden is a laboratory, like a chemist's; the test tubes, the re-agents, the laws of affinity, all beautifully existent in it in principle, sources of the most admirable knowledge, donors of the most exquisite delights, and all at the same time higher in quality exactly in the degree that distinguishes between inanimate things and living ones. Mere care for a garden as a place for idleness and the display of colours, and where thought and enterprise are to be laid aside, may be excusable, and even amiable, but can never become enviable, and is always liable to degenerate into the spirit that takes vacant fops and mincing flirts to the flower-show, where they stoop to smell the "green rose," and declare its perfume "heavenly."

The Romans again were too deeply enamoured of grandeur and magnificence; they preferred splendid buildings to the fairy-land of a delicate garden; they were, moreover, an impatient people, demanding rapid realisation of their desires; and as an arch of triumph, a colonnade, or a temple could be seen to grow to its full height, as it were, more rapidly than a garden, which attains perfection only by slow degrees, horticulture was left to the simple purveyor of commodities. There is nothing like a garden, as every true gardener knows, for teaching patience. In the garden our hopes and wishes have to lie like a chrysalis, biding their time; the wings and plumage are forming, nevertheless, all the while, and by-and-by see how beautifully Psyche comes forth! What we have said of course applies most especially to Roman horticulture in reference to flowers and ornamental plants. But it bears directly also upon horticulture in the general sense, and very suggestive is it to ponder for a moment on the incuriousness of an old Roman gardener as contrasted with the untiring and multiform zeal of an English one, say even in the single matter of obtaining superior sorts by hybridization or cross-breeding. The fine climate of Italy and the beauty of its spontaneous productions no doubt account at the same time for the ruling indifference as to exotic plants, excepting trees of great usefulness. These would seem to have sufficed for satisfaction of heart, and no doubt there was many an echo heard to the patriotic verse in the second Georgic; "yet neither the forests of Media, that richest of countries, nor lovely Ganges, nor Hermus that 'rolls down its golden sands,' *laudibus Italiæ certent*, can vie with Italy in desert of praise."

But if they needed no hot-beds or "frames," and were liberally provided for by nature, still, from certain allusions in Martial, it would seem that the Roman gardeners had notions as to the art of "forcing." There appears to be no doubt that the Emperor Tiberius, who was very fond of Cucumbers, had a supply throughout the year, obtained by means of moveable stoves, which contained boxes for the plants, and allowed of being wheeled out-of-doors during fair weather and while the sun was shining. These stoves were called "specularia," from being fitted with slabs of talc, "lapis specularis," the material employed for windows before the invention of glass, and possibly served well enough for the purpose mentioned; but they would never allow of the forcing of Peaches and Grapes, which certain writers have imagined to have been practised. Anything special that may have been accomplished in regard to Grapes would seem to have consisted not in obtaining an *early* crop, such as would now be understood by forcing, but in securing a *late* one. This would be effected by the destruction of the early or first flood of bloom, and the encouragement thus given to the development of a second; and if the plants were kept in a building that could be warmed when necessary, we can quite understand not only how Grapes could be obtained in winter, and the "Roses" which the poet alludes to, but his playful hit at his friend's domestic arrangements, when he says he would rather be the guest of the fruit trees than of the owner, so much more comfortable was their lodging! LEO GRINDON.

Mammoth Sea-Weed.—While Professor Agassiz was on his scientific expedition to South America this season, he found among other curiosities near Patagonia a gigantic sea-weed, the largest known, in fact the longest growth made in the vegetable world. This Alga grows along the coast in from six to twenty fathoms of water in vast beds, and so compact that mariners avoid them for fear of an inextricable entanglement. The stems are of immense growth, some of them reaching the enormous length of 1,000 feet. The "Hassler" passed patches of the Alga in open water, and the party saw large sea lions lying upon the weeds.

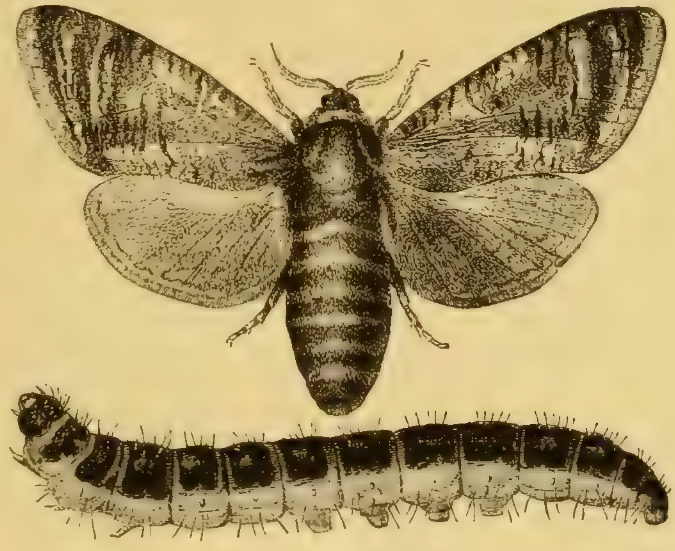
GARDEN DESTROYERS.

THE GOAT MOTH.

(COSSUS LIGNIPERDA).

One day last autumn we observed two or three people gathered round a tree in Ladbroke Grove, Notting-hill, and had the curiosity to enquire what was the matter, when we were gravely informed that the tree was inhabited by venomous caterpillars. We knew the tree well. It is a Poplar, which has for years past been tenanted by a colony of caterpillars of the goat moth. It is literally riddled by their galleries; in some places a wet, offensive exudation of rotten sawdust and putrescent-looking stuff issues from holes in the bark; and here and there large pieces of bark have given way, revealing the gaping ravages within.

The caterpillar of this moth is flatter than usual, the texture is the shining skin characteristic of maggots; but its chief distinction is that its upper surface is uniform red, passing into flesh colour or whitish or yellowish on the under side. The red is paler in the younger examples; at first rose-red, then lip-red, then a slight dinginess comes in, and we have it Indian red; from that it goes to Venetian red, and finally, when the insect is full grown, it attains a deep tawny port or claret hue. Lastly, when about to pass into the chrysalis state, the blush fades away from its countenance, and it turns into a kind of unhealthy-looking yellow. The head and a bilobed mark (lobes pointing backwards) on the segment behind it are black. It takes three years to attain maturity, and lies in the pupa state for another year, so that the natural term of the life of the insect is four years. It feeds on the solid and sound wood of various kinds of trees, preferring the different kinds of Willow and Poplar, and next to them the Elm, but it by no means restricts itself to them. It is also found in the Lime, the Alder, Beech, Walnut, and different fruit trees, and it has even been met with in the hardest of all our woods, the Oak. It is curious that in different countries it seems to give a preference not always to the same trees. In the neighbourhood of Paris, it is especially the Elm that suffers. It has done immense damage there to that tree. Here, the Elm is comparatively seldom attacked; it is the Willow and Poplar that are first favourites. It would appear to be the same in Germany, where it is called the Weidenbohrer or Willow-borer. The mischief which this caterpillar does is not merely the eating away of the solid part of the timber; that in itself may be carried to a great extent without destroying the life of the tree. Its life resides only in the outer circle of cambium, or at most in it and the sap-conveying tubes forming the outer circles of timber; the inner wood is dead matter, and might all be removed without other bad consequences than the deprivation of support. Of course, without the support, and the continuous support, of the inner wood a tree could not long stand. It would be broken over by the wind, and when only part has been removed, it is at that weak part that the fracture takes place. But the goat moth caterpillar not only removes much of the substance of the inner timber, but begins by removing the cambium or living part, and moreover, damages what it leaves, and lays a foundation for general rottenness and decay.



Goat Moth and Caterpillar (natural size).

It is common all round London, and trees affected by it may easily be detected by the disagreeable scent infused into them by this destructive caterpillar. We have not noticed it in Kensington Gardens or Hyde Park, but it is in Battersea Park, in Kensal Green, in Holland Park, and in some of the neighbouring gardens, as well as in various squares and boulevarded streets.

It is the insect which Lyonnet made the subject of his celebrated anatomical researches in that class of animals, and he could not have found one better adapted for his purpose. It is the largest European caterpillar, and nothing but a giant among caterpillars could have enabled him to dissect, reckon, figure, and describe as he did 4,061 muscles in its frame.

As soon as it is hatched the caterpillar begins to feed on the inner and tender part of the bark and cambium; it then passes on to the liber, beyond which in its first year it does not go. In the second year it goes deeper, but still confines itself to the soft outer layer of wood. The third year it has become so strong and powerful that it now pushes its way even into the heart of the tree. It arrives at its full size in summer, when it usually makes itself a cocoon of the sawdust or debris glued together by silken matter; this cocoon is usually built in one of its galleries close to a sufficient opening. Sometimes, however, the caterpillar comes out of the tree and makes its cocoon in crevices in the stem near the root of the tree, or in the earth at its base, perhaps at times even at some distance from the tree. The inside of the cocoon is smooth and comfortable, the outside rough. The pupa is brown, and, like its ally the leopard moth, has a series of teeth or spines on the margin of the back of the abdominal segments, which enable it to shift its position when the time to make its way out of the cocoon arrives. The empty open pupa is usually left sticking half out of the cocoon.

The moth comes out between the latter part of June and the end of July. It is of a brown and smoke colour, marbled with white. The antennæ are pectinate, both in the male and female. We have already, under the head of "Zauzera," mentioned the peculiarity that its mouth is unprovided with tongue or means of feeding. The female is very fruitful, as many as 1,000 eggs having been counted in one individual; and it is reckoned that the usual number of eggs laid is, on an average, 700 for each female. They are deposited in the bark, near the base of the tree, by means of a strong, hard, tubular ovipositor. The eggs are smoke-coloured or dirty white, rather large; but not so much so, perhaps, as might be expected from the size of the insect.

The habit of the moth is to rest on the trunk of the tree from which it has emerged, or on a neighbouring tree, with its wings folded like the roof of a house. It never goes up among the branches, but rests on the stem near the bottom, so that it is not difficult to catch it when the eye is once habituated to distinguish it from the bark on which it rests—not so easy a task as, from its large size, might be thought; for the colour and marbling of the insect are so wonderfully adapted to those of the bark of the tree, that an uneducated eye is almost sure to pass it over. It deposits its eggs equally low down on the tree—so low that a mode recommended for protecting trees from them is to plaster the base of the tree, at the proper time (June to September), with a thick coating of a mixture of clay and cow-dung, which the ovipositor of the female cannot penetrate. The remedy recommended by Boisduval is to buy up all the females that can be found; a shilling apiece would set the children of the neighbourhood to work, and he thinks it worth the money. It seems to us that a proper precaution would be to cut down every tree that is found to be seriously attacked. There is no getting at the caterpillars in the galleries, although poking them with pointed wires and blowing tobacco smoke in upon them have been proposed as a means of doing so.

Their work is easily recognised from the size and proximity of the galleries they make. The injury they do is often very great; and, unfortunately, after a tree has once been attacked by the Coccus, it never recovers, although it may languish, spreading infection all around for a long series of years. When at last cut down, the timber is so bored and damaged as to be fit for nothing but firewood. This species extends over the whole of Europe. There are five allied species in North America, and also species in India. A. M.

INSECTS THAT INFEST ORCHIDS.

Most plants are subject to insect pests, although it is not often that they do any serious damage, that is, if ordinary precautions are taken by the cultivator or his assistants to prevent injury. Thrips is one of the worst, especially if the temperature of the house is excessive and the atmosphere dry; but in the houses devoted to cool Orchids this ought never to be the case. The cool, moist atmosphere of the Odontoglossum house is not the most favourable for insect life. Red spider sometimes, though rarely, makes its appearance in a dry corner, and if there is a yellow thrips in the house it is almost certain to commence operations on the juicy foliage of Cypripedium Schlimmi. The yellow fly, so common in Orchid houses, will infest the flower-spikes of Odontoglots and Calanthes, but two or three moderately strong doses of tobacco smoke will clear them out. Tobacco rag, *i. e.*, the old coverings of the rollers used in the manufacture of "twist," is far preferable to the vile rubbish sold as tobacco paper, and the chances of burning are considerably reduced by its use. In smoking Odontoglossums great care must be taken, or the smoke will do serious damage. They should never be subjected to smoking if in the least degree shrivelled by a hot and dry atmosphere. Mr. Culley, who has charge of the well known collection of "Cool" Orchids at Ferniehurst, never hesitates to smoke his Odontoglots, but it must be remembered that their bulbs and foliage are fresh and plump, in which condition it rarely harms them, though Mr. Bateman, whose name in connection with Orchids is well-known, strongly objected to the use of tobacco smoke in the Odontoglossum houses.

Orchids grown in cool houses rarely suffer from the small white and brown scales which make such sad havoc among Aerides and Vandas; still, if they should put in an appearance, it will most likely be in the warm end among the Cattleyas and Trichopilias. If the plants are regularly sponged over with tepid water, and kept free from dust and dirt, they are not near so liable to the attacks of insect pests as they otherwise would be, and the plants look all the better for the trouble.

Some insecticides are very effective in the destruction of thrips and green fly; we have used "Fowler's" with success and also "Frettingham's." Messrs. Parr & Atherton, of Nottingham, have registered an effective contrivance for applying the latter kind in the form of fine spray, and by the use of this invention a little of the compound is made to go a long way, and it forces it in among flower-buds of the most delicate description without injuring them in the slightest degree. This latter is very useful when but a few individual plants are affected, but when a large quantity of good-sized specimens has to be cleaned there is no better contrivance than the water-barrow we have figured. This can be half filled with any useful insecticide and then the plants may be entirely immersed so as to ensure the death of every insect with which it may be infested, or the plants may be held partly in the liquid and syringed thoroughly without any of the compound being wasted. Anyone who once possessed this useful contrivance would never care to be without it. I would caution the unwary cultivator against the use of methylated spirits for clearing Orchids of white and brown scale. It kills scale without a doubt, but seriously disfigures the foliage operated on, more especially if it gets caught by the sun's rays soon after it is applied. The following are well-known methods of capturing and destroying insects that infest Orchids generally.

For Cockroaches and crickets, place bell glasses, bottles, smooth or glazed pans, so that the sides are in a slanting position, and fill them with treacle and water, in which the insects drown themselves. Woodlice may be destroyed by placing Potatoes cut in halves about the plants, which should be examined every day till they disappear. Green-fly may be killed by smoking, but it must be done very carefully with good tobacco paper, or the leaves of some will suffer. If to 1 lb. of tobacco paper, 1 oz. of saltpetre be dissolved in water by boiling it in a small pan, and sprinkled over the paper, or the paper soaked in it, it doubles the strength of the paper without much increasing the risk of burning, still only half the quantity must be used, and if a certain weight be not strong enough for a house, it may be gradually increased. Three smokings on successive nights will kill thrips; or for either thrips or spiders, if the plants be washed with a mixture of 1 oz. of bitter aloes and 1 oz. of tobacco to a gallon of water, it is safer than mixtures containing soft soap or turpentine, which are apt to burn the plants or spoil the leaves if it gets in the crowns. Tobacco water made from pure tobacco in bond, free of duty, may be had at many places, and at the nurseries at 3s. 6d. per gallon. They should be washed immediately on its appearance, and the plants examined a time or two about once a week after, and if done as soon as seen, and not allowed to spread, there is little difficulty in keeping them clean. Ants may be destroyed by a few fresh, unpicked bones being placed for them, or sponges wetted and filled with sugar, or treacle in bottles or pans. Slugs may be collected by a little bran placed under some Cabbage leaves, or pieces of bark with the hollow side down, which is also a good trap for woodlice. F. W. B.

Mining Rose Insect.—It has, no doubt, been observed by many that in autumn the leaves of the Rose tree on their upper surfaces are very often marked in various directions with broad brown lines, having a narrow black one running down the middle. This curious appearance is caused by the small caterpillar of a minute moth (Microsetia (Tinea) ruficapitella) which feeds inside of the leaf. When full grown, the caterpillar is nearly two lines long, of a yellow orange colour, with a brown mark down the back, the head very flat and sharp, and light chocolate. The brown mark on the leaf is caused by the epidermis drying, from the insect having eaten the parenchyma, or substance of the leaf beneath; the black one by its egesta, which, during its young state, entirely stop up the mine. When full grown, which is about the 24th of October, it eats out of the leaf, and crawls down the branches and stem, until it has found a convenient place to fix its cocoon. This is the only time when it finds it necessary to make use of its legs, which seldom exceeds an hour, sometimes less. The cocoon is very flat, and at first of a pure white, which is changed by the first shower of rain to light orange; it afterwards becomes of a deep brown, so nearly resembling the bark of the Rose tree as only to be distinguished by a practised eye. This change takes place very rapidly. When kept dry, the cocoon remains perfectly white, and produces the moth at the usual time, as well as those which have been saturated with water. The pupa is light brown, of an oval shape, about a line long, and half that in breadth, and the perfect moth appears about the 12th of May. The moth is the red-headed pigmy (Tinea ruficapitella, of Haworth). The upper wings are gold coloured, with the apex purple, the head ferruginous, the expansion of the wings $2\frac{3}{4}$ lines.—Q.

Scale Insects.—Kindly tell me the name of the scale of which I send specimens.—P. C. [The scale sent is the Mussel scale (Aspidiotus conchiformis), and unusually numerous. We have seldom seen so bad a case. Where they are not numerous, brushing them off with a hard nail-brush is recommended, but here such a remedy would be useless. It is a case for strong measures, and we would recommend you to paint the whole affected branches with quick-lime. You must, however, take care to proceed with caution, or you may injure the trees. —A. M.

Bruised Laurel-leaves a Cure for Aphis.—If the infested plant is small, take three or four Laurel leaves, beat them all over with a hammer, so as to thoroughly bruise them; then place them round or under the plant and cover; a small bell-glass does best. Let all remain closed for a few hours, and the aphides will be found dead, each hanging by its proboscis only. If this process is repeated within a day or two, to make sure, the plant will be perfectly freed, and in some cases it is not again attacked. This way of killing aphides may be acceptable to those who dislike tobacco smoke; all danger arising from an overdose of it to a very tender plant is avoided; and the Laurel is so generally grown, it must be almost everywhere at hand for the purpose.

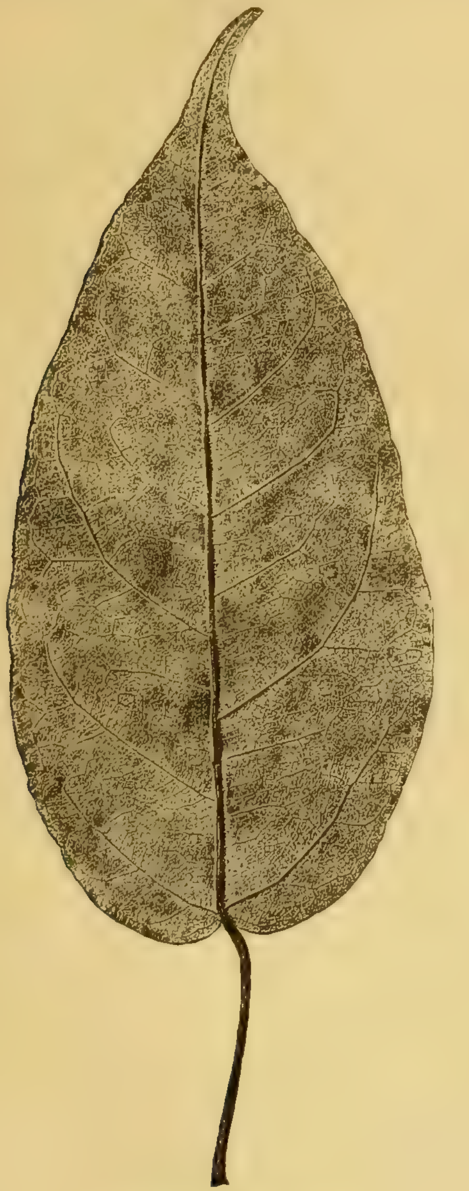
THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE ENTIRE-LEAVED NEPAUL MAPLE (ACER OBLONGUM).

This, in its native country, forms a handsome evergreen tree 20 feet high, with a loose spreading head, and long, slender, smooth glaucous shoots; but in England it is tender and requires protection in winter, particularly for the first three or four winters after planting; and although it may after that time get killed down to the ground in severe winters, it will always shoot up vigorously the following spring, particularly if protected at the base by a layer of old leaves, and frequently produces during the following summer shoots from 4 to 5 feet long, which, when clothed with their fine Laurel-like leaves, form a very attractive bush. This Maple is a native of the lower or outer mountains of Nepaul and Bhootan, where it forms woods at elevations of from 2,500 to 4,000 feet. It was first introduced in 1824. The leaves are oblong-lanceolate, taper pointed, quite entire on the edges, rounded at the base, thin and leathery in texture, persistent, and set on rather long slender footstalks. They are deep glossy green above, very glaucous and white beneath, and are quite smooth on both surfaces. The flowers are small, pale yellow, and are produced in loose, short, terminal compound racemes, in February and March. The fruit or keys are rather small, with hairy carpels, particularly when young, and short smooth wings, a little spreading. The synonyms are Acer laurifolium, nepalense, and sempervirens. The length of a full-sized leaf is 6⅓ inches, including the foot-stalk, which is 1½ inch long, and the breadth is 2¼ inches.



Full-sized leaf of Acer oblongum.

MOVEMENT OF THE SAP.

I fully concur with your correspondent, "A. M.," (see p. 160) that the discussion of this topic must be attended with useful results; and I therefore offer a few further remarks in reply to him, and in explanation of the points upon which he and I seem to differ in opinion. He attaches more meaning to the word "suction" than I had supposed when writing my last communication; but I confess that in my judgment, the word "assimilation," which, as a vital process, includes the idea of suction and a great deal more, is a far better word to employ; because it conveys, physiologically, a truer conception of the way in which nature carries on her work in the vegetable kingdom. Every man of science knows that the vegetable processes are incorporated with the animal, in the animal kingdom; and if we study the latter carefully, we find that in every animal body a function is performed strictly analogous to the circulation of the sap. If we regard, as indeed we may, the animal stomach as the "root," corresponding with that of the plant, we find that the proper function of that organ is to receive the crude materials of food, of whatever kind it may be, and to convert its nutritive elements into "chyle," which is simply "animal sap," and which, by means of suitable vessels, is conveyed into the current of the blood to augment the permanent stock of that tissue-making fluid. Now, this is precisely similar to what we find in the vegetable world; and to pursue the analogy, if we follow the course of this "animal sap or blood," through the arterial system of vessels which convey it to the tissues it is destined to repair and nourish; we come to a system of vessels more and more minute until we reach what are termed the "capillaries," vessels so minute as to resemble in calibre the merest threads, scarcely visible to the naked eye unless injected. Now, do we find here anything like "a suctional power" in operation? I think not. What we do find is precisely what we have in the leaves and tissues of the plant—a power of "assimilation," a kind of digestive process, by which, through the mysterious agency of the vital principle, the sap or plant food, brought up by the *vis à tergo*, described in my former letter, comes into contact with the absorbent vessels of the vegetable structures, and is, by their action, obliged to yield up its nutritive qualities, so necessary to the development of the buds, leaves, and other plant organs. This is just what goes on in the tissues of our own bodies, and though the process is a vital one, and, therefore, not easily comprehended, I think your readers will agree with me that "assimilation" is a better word to use than "suction," in order to convey the precise nature of the function performed, whether in the animal or vegetable kingdoms. In both cases the food is conveyed to the tissues, and in both an appetite, if I may use the term, exists for it, and if "A. M." will kindly substitute "assimilation" or "absorption" for the word "suction," in reference to that appetite; and "excretion" or "exudation" in lieu of "pumping," in reference to the evaporative process and the mode of ascent of the sap, his views and mine will be found to correspond pretty closely. But I repeat that there is nothing in the vegetable economy that exhibits the property of expansion and contraction involved in the idea of "pumping," and such as we do find in the animal body, represented by that wonderful pump termed the heart, and that complex system of arteries whose systole and diastole assist so efficiently in propelling the current of the blood. From the foregoing remarks, it is clear that I am misunderstood by your correspondent "A. M.," who seems to think that I regarded the process by which a plant is nourished as mechanical, whereas I only applied the idea of mechanism to the mode of the ascent of the sap. My unwillingness to trespass upon your space prevented me from offering, at that time, the fuller theory above rudely sketched; but I hope yet with sufficient distinctness to aid, in some degree, in clearing up the difficulties which beset this interesting subject.

I may remark that the experiment with the twig mentioned by "A. M." does not in any way conflict with my theory of plant circulation and nourishment. The fact of the colouring matter finding its way upward in the twig, after severation from the plant, only shows what we know to be a peculiarity of all plants, that the vital power is not destroyed by that severation, and that the plant functions go on, only perhaps in a less active manner than ordinary, under such circumstances. If this were not so, the trade in "cuttings" would not be the thriving one it is. In the animal kingdom this capacity of retaining life in a detached member is at its minimum; it increases as we descend to the lower beings of the animal scale; and when we come to the vegetable kingdom, we find this remarkable power of self-existence in sundered parts at its maximum degree; so much so that in many instances every bud may be regarded as a distinct plant, capable of a separate existence when detached from the parent stem. Assuming then that the severed twig is placed in coloured water, it is evident from the experiment referred to by "A. M." that the freshly-cut stump can perform the function of a root, not quite naturally, however, in this case, because here the only function that can go on—the supply of sap being cut off—is the absorption of the coloured water, by capillary attraction, through the wounded vessels of the plant. A twig would not often survive long under such circumstances; but place it in soil, or in other favourable conditions, and roots will spring from the stump, and the formation of sap will be resumed. It may be said that capillary action would not explain the ascent of the coloured fluid, because the sap being cut off, there is a stationary condition of the sap remaining in the twig after separation from the plant, which would prevent such action from taking place. But a little reflection will show that so long as the vital principle remains in the twig circulation must go on in its tissues; that is, if there is any fluid to be circulated and within reach. Stop all circulation and the twig must die; but place it in water, coloured or not, and circulation will go on, because the vital principle, still dwelling in the tissues, leaves, &c., the latter still perform their functions of absorption, secretion, and evaporation, and this wear and tear necessitates a supply of nourishment, which is conveyed upwards, by capillary action in the first instance, and subsequently, if the twig be planted and struck, by the ordinary action of the newly-formed roots. "A. M." asserts that the "sap" must continue to rise in the severed twig, because the coloured liquid rises; but how can this be assumed when there is no source left for sap to come from? for to assume that sap is formed from the water, in the absence of roots, would be a far-fetched idea.

To make my meaning quite clear, we have, I may say, two distinct mechanical agencies engaged in carrying on the circulation of the sap:—1st. The mechanical expansion, due to the exudation of sap from root action, causing the ascent of the sap in the larger vessels, by supplies constantly added from below. 2nd. The mechanical process, familiarly known as "capillary attraction," which commences at the points where the former agency ceases to operate, and which is limited to the more minute vessels, which convey the sap directly to its ultimate *points d'appui*, where the assimilating function is effected. If this capillary attraction be what "A. M." terms suction, there is nothing new in the theory, for this peculiar agency has long since been described by botanists as a cause of the upward sap movement. I am quite aware of the large evaporation from the leaves of plants mentioned by "A. M.," and agree in all he says as to the important purpose which this function fulfils; one analogous to the perspiratory action of the skin of animals—viz., an outlet for the waste matter of the vegetable economy. I do not, however, see in this function of the leaves anything resembling suction. They both absorb and excrete like the animal skin; and upon the healthy performance of the excreting process very much depends, because it is obvious that, unless there is a free transpiration from the leaves, the ascent of the sap must be obstructed; whilst, on the other hand, its due performance systematically empties the plant vessels through which the sap must ascend mechanically, as explained in my former communication. No doubt, as "A. M." remarks, Nature's processes are very complicated, and she never works by "single action." In plant action, a variety of mechanical, chemical, and vital processes are working harmoniously towards a common purpose. Human thought and experiment may, indeed, attain to an approximate view of the truth in relation to the facts which those instruments bring within the scope of our intellectual vision; but all that we can hope for in this discussion is that we may, by mutual help, endeavour to place those facts in true scientific position and relationship, so as to produce a theory that will harmonise with our knowledge and at the same time satisfy the requirements of scientific observation.

Dublin, March 3, 1873. Robert M. Chamney.

CONIFER AVENUES AND OLD YEWS.

In making an avenue of Pines, what distance apart should they be planted, *i. e.*, whether should they be set thickly at first, or placed at the intervals at which they are to remain? The latter plan would take fewer plants, but they might not grow so well. Also, do you know any way of arresting decay in Yew trees, on which the foliage is becoming brown here and there? They have been transplanted upwards of two years, and have hitherto looked very healthy. Some of them are twenty years old. J. S. G.

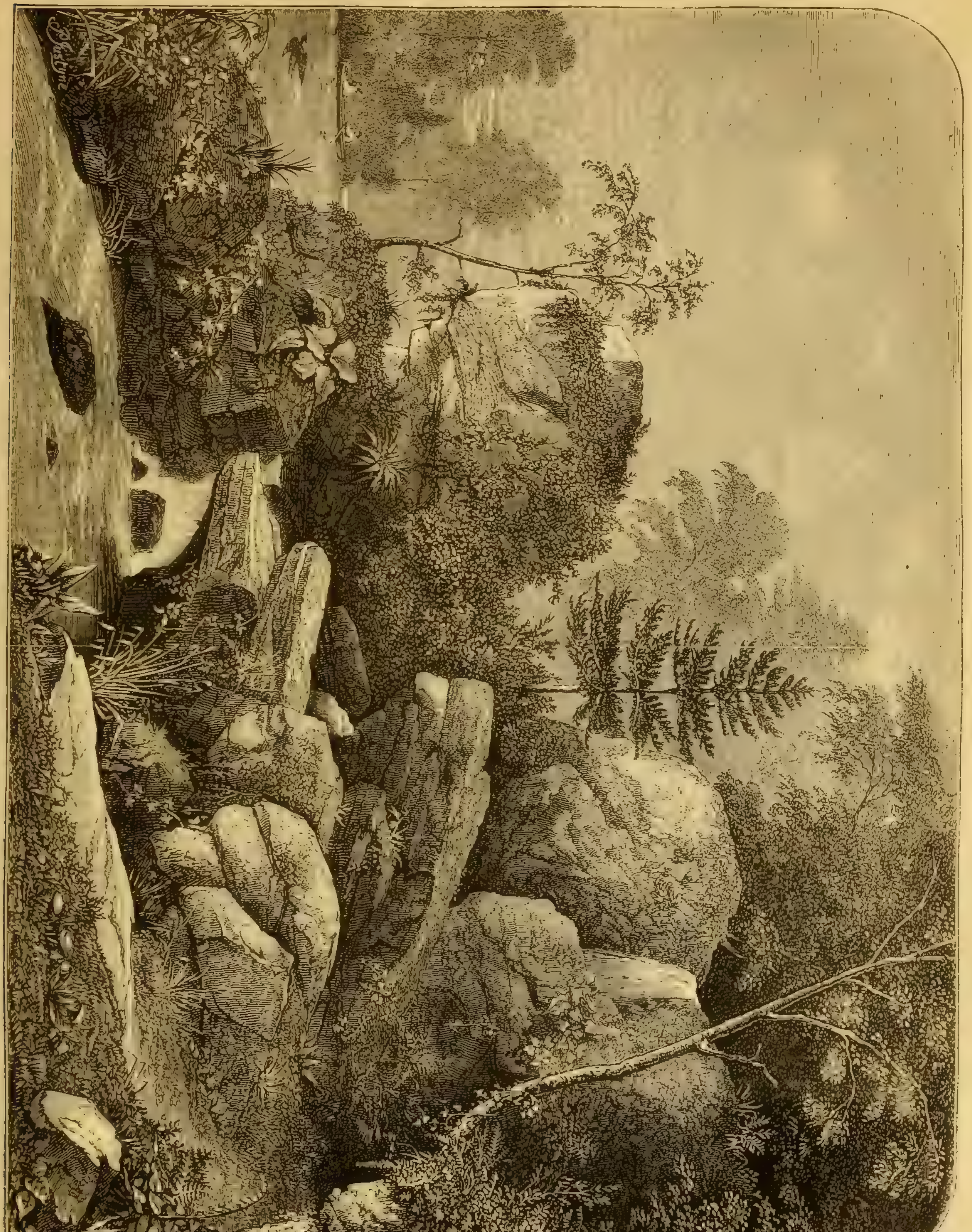
Tyrone.

[In making an avenue of Pines, I wish your correspondent had been a little more explicit, and had stated what variety or varieties he proposed to plant, and what length and breadth he proposed to make his avenue; also some data as to the quality of the soil, and whether the situation is exposed or sheltered. In forming an avenue of Pines, supposing such free-growing and beautiful varieties as the Picea nobilis or Abies Douglasii are to be used, I would plant about 40 feet apart, if the soil is good; much will also depend on the situation, whether sheltered or exposed, and whether they will ever become fully developed. If all conditions are favourable, and the avenue is of moderate proportions, the distance just indicated will suit very well for the larger growing species of Coniferous trees. The second sized species, such as Abies orientalis, Cupressus macrocarpa, Abies Pinsapo, &c., may be planted at 25 to 30 feet asunder. As to whether the trees are to be planted thickly at first or placed at the intervals at which they are to remain, I would advise planting them at once in their permanent places, and filling up the vacant spaces with common trees to act as nurses; or if appearances require it, plant up with quick-growing shrubs, such as Portugal Laurel or common Bay, to be thinned out gradually as the avenue trees fill up the ground. As regards arresting decay in Yew trees in which the foliage is becoming brown here and there, I have frequently seen Yew trees with the foliage in that condition, when growing in poor, light, gravelly loam on a dry gravelly subsoil. In this case the remedy is top-dressing with rich compost; to deepen and enrich the soil; for all, or nearly all coniferous trees, like a moderately rich soil to grow in, either naturally or made so artificially. I have used thousands of cart-loads of decayed vegetable matter for this purpose, the effects of which were visible in a few months after its application, the yellow tinge of the foliage giving place to a fine rich green. Removing the soil near the roots and replacing it with a good strong loam, in which the Yew tree delights, will answer the same purpose and be more permanent in its effects; but this is a somewhat expensive process, and can only be judiciously recommended where a few favourite specimens are to be operated on. In strong stiff soils imperfect drainage often causes Yew trees to have an unhealthy appearance. If the subsoil is formed of clay or other substance very retentive of moisture and not thoroughly drained, or even if the drainage is pretty good, if the pits to receive the trees when being transplanted were formed in wet weather, and much trampled, a puddle is formed which will effectually hold water, and the almost unprecedentedly large rainfall of last season would aggravate the evil and keep up a supply of stagnant water around the roots, which would account for the unhealthy appearance of the trees; a drain carried from each pit would remedy this defect.—Archd. Fowler, *Castle Kennedy, Stranraer.*]

GARDEN DESIGN.

THE NEW ROCK-WORK IN BATTERSEA PARK.

This is the first attempt at making a really picturesque rock-work that has been carried out in any London Park. Considered as such, its effect is very good indeed, and the imitation of natural rock very happy, as might be expected when we state that it was executed by Mr. Pulham, of Broxbourne, who has made most of the really effective rock gardens in the country. Our illustration shows rather a close view of the portion of the rock-work near the cascade; the general effect of the whole, as seen from the other side of the lake, is very different and very satisfactory of its kind. As yet the rocks are not sufficiently covered or garnished with vegetation to present the best effect, but already their appearance is highly satisfactory. This rock-garden is not one prepared specially for rock-plants, but rather for its picturesque effect in the park. It is easy, however, to group rock-plants on the slopes of earth near the large masses of artificial rock, and this has already been done to some extent. In one part we were glad to notice that the excellent opportunities which such large rocks offer for the display of the glorious new Clematises had been taken advantage of. Our illustration of this rock-garden, drawn by Mr. Justyne and engraved by Mr. Cooper, is, we believe, the first ever published which gives a worthy idea of a rock-garden on a large scale which is really worthy of imitation. Such examples cannot fail to have the best effect on the gardening design of the future.



THE ROCK-WORK IN BATTERSEA PARK.

THE FLOWER GARDEN.

LILY OF THE VALLEY.

The present being a very good time to make new plantations of this Lily, select a good piece of ground for the purpose, manure it well, and then trench it 3 feet deep. If stiff land add to it plenty of coarse sand or leaf-mould, ashes, or mortar rubbish. The crowns should be singled out to one eye, and all superfluous runners should be cut away, leaving the roots only. If single eyes are chosen, plant them in rows 2 inches apart, keeping the crowns well up to the surface, and cover with a little sand or any similar light coarse material. If clumps are wanted, take eight or ten eyes, place them in a bunch carefully, and tie a piece of matting round them; then plant them in the form of a triangle, a foot apart and the same distance asunder row from row, placing a handful of sand on each bunch, so that the rains may wash it down amongst the roots, leaving the eyes above ground. If well watered during dry weather, these clumps make fine material for forcing the second year. They should always be covered up with moss or cocoa-nut fibre when put into heat for early flowering, and kept damp, to get them well furnished with leaves. Should any flowering crowns be found amongst the stock at planting time, take them out and place twenty-four of them in a 6-inch pot; put them into heat, covering them up until they begin to break; then remove the covering, and put them in a warm light place, giving them plenty of water. Single crowns flag much sooner than clumps if cut or set in a draughty cold place. It is never necessary to keep Lilies of the Valley established in pots as, when forced, they do not root until after they have flowered. I take up mine as they are wanted, and place them in a pit, covering them up with leaves or moss, and giving them a good watering. I afterwards keep them wet, and pot them as they are coming into flower.

W. Howard.

Balham.

CHRISTMAS ROSES.

Flowers at the close of the old and beginning of the new year, even under glass, are by no means abundant, but abundantly precious, owing to the demand for them at that festive season, and the utter disproportion that exists between supply and demand. Few but are then made to feel the pressure and the pinch, and many with limited means are often regretfully obliged to denude their plant-houses of even the ghost of a flower. To obviate the necessity for this, it would be very agreeable if the cultivator could look outside his stove and conservatory, and have at hand some hardy helps which would enable him to tide over the difficulty. But, nonsense, the reader will perhaps exclaim—outdoor flowers in January! What are the plants or where are they to be had hardy and venturesome enough to put forth flowers at this, the most inclement period of the year? Well, it is no dream; such plants are the Christmas Roses or Hellebores, several of which are common enough, and there need be little difficulty about procuring any of the less common species, if desired. Everybody is familar with the Christmas Rose, (Helleborus niger), which, commencing to flower about the time of the festival from which it derives its name, continues to bloom far into the new year. Well established masses of this are most effective when in flower, and we need not hint as to how useful its snowy blossoms are for the decoration of the drawing-room or the dinner-table. There is also a variety of this species—H. n. grandiflorus—with flowers much larger, of a purer white, and in every way more desirable than the species itself. This is the first to flower, and perhaps the next is H. purpurascens; its flowers, livid and lowly, which raise their heads barely above the soil, are not very striking. H. atrorubens and H. olympicus, with dark purplish flowers, succeed; these are followed by the finest, to our mind, of all—H. orientalis; its bold habit and profusion of large white flowers elevated on tall footstalks fully entitling it to be regarded, even apart from the season at which it flowers, as one of the finest and most telling border plants in cultivation. There are many other showy and desirable species, but as yet comparatively scarce. Of these, H. kamtschatensis is one. It is a white flowered species, in appearance and habit similar to the common Christmas Rose, but, to our mind, much superior. H. colchicus is one of the most beautiful of the red-flowered species; and then there are H. chinensis, H. odorus, H. vernalis, and others. Now, besides the value of these Hellebores for affording cut flowers at a time when they are at a premium, they are also well calculated to play an imposing part in the winter and early spring garden. For instance, would not a small circular bed, in a sheltered spot, planted with some half dozen sorts, be pretty and effective at a time when all around is dull and flowerless? It might be planted in this way—say a mass of the tall white H. orientalis in the centre, then a band of the dark reddish purple H. atrorubens, followed by another of the white H. niger or H. kamtschatensis, next a ring of the low-growing H. purperascens, the whole finished off with a golden circlet of the bright little Winter Aconite (Eranthis hyemalis). In lines, or dotted and graduated after the same fashion in the dressed and sheltered shrubbery border, an excellent effect might be produced. The Hellebores are the earliest of hardy flowering plants; in fact, some of them are going out of flower before what has been poetically, but incorrectly, termed, "the first pale blossom of the unripened year"—the Snowdrop, ventures to expose its hardy petals to the nipping blast. All the species are perfectly hardy, all free growers, and of the easiest cultivation, thriving in almost any soil or situation, but best where they are somewhat sheltered and partially shaded. They are increased from seeds or by division of the roots, and will grow and flower in partially shaded and sheltered situations in most parts of the country.—*Irish Farmers' Gazette.*

THE SWEET-SCENTED POND-WEED.

(APONOGETON DISTACHYON.)

Observing Mr. M'Nab's valuable remarks upon this highly interesting plant, we may, for the encouragement of aquatic plant cultivators, state that we have found the plant to thrive and bloom well in our comparatively small pond at a depth of about 2 feet, and occasionally a little more, the centre depth of the pond running down to 4 feet. The floor is paved with bricks, without any contiguity with under-springs, the required consumption of water being supplied from public works. In the majority of instances we think that the failures that occur as regards the establishment of the plant are to be attributed to its being planted in too shallow streams, within the influence of frost, where it naturally gets "starved out" on account of its undue proximity to the cold surface water-flow. The flower-scapes of this species have been known to rise from between 2 and 3 feet in depth to the water surface—showing a wise provision in its structure for preservation when removed to a colder climate than its native one, and illustrating an important fact in vegetable physiology, that plants capable of forming roots at a great depth offer a stronger resistance to extremes of temperature than those whose roots are near the surface, as the temperature of the soil or water varies less in proportion to its depth. Though there are instances of the plant growing luxuriantly in still waters of a given depth, yet we would not commend a less depth than from 12 to 18 inches below the water surface. Being a native of the Cape, and a tuberous-rooted plant, it generally seeks a brief period of rest during our hot summer months, and again appears in vigorous growth during the spring, early summer, and autumn. Established plants produce flowers in succession for several months. In the conservatory, this fragrant and charming water plant may be grown, in deep pots or vases, with other miniature aquatics, plunged in water from 1½ to 2 feet in depth. For obtaining a succession of bloom in winter, a few strong reserve plants should have a partial rest late in summer, previous to being placed in a conservatory or stove for a gradual stimulus by the aid of a tank or bark bed. Pulverised turfy loam, with a fourth part of heath mould, is suited to its growth.

E. G. Henderson and Son.

THE WATER CHESTNUT.

(TRAPA NATANS.)

The very singular four-horned fruits of this Trapa, which was the only one formerly known, have been compared to the spiked iron instruments called caltrops, employed in ancient warfare for strewing on the ground to impede the progress of cavalry; and, from the plant growing in water, it is sometimes called the Water Caltrops. Its flowers have a four-parted calyx with the tube adhering to the ovary; four petals, and as many stamens; and a two-celled ovary, with a cylindrical style and hemispherical flat-headed stigma. After flowering, the lobes of the calyx harden and form two or four more or less conspicuous horns at the top of the fruit; the latter being one-celled, hard, and unopening, and containing a solitary large pendulous seed, with very unequal cotyledons. Besides the European species, there are five or six others, natives of India, China, and Japan. All are floating plants, with long-jointed rootstalks, having tufts of hair-like roots (sometimes regarded as submerged leaves) at the joints, and surmounted by a radiating cluster of triangular toothed leaves, with swollen float-like stalks, which serve to buoy them up.

The seeds of all these plants abound in starch, and are much eaten as food. Those of T. natans—called Jesuit's nuts at Venice, and Chataigne d'Eau by the French—are ground into flour and made into bread in some parts of Southern Europe. In Kashmir those of T. bispinosa, the Singhara of the natives, feed 30,000 persons for five months in the year, and are so extensively collected that the celebrated Runjeet Singh, of Lahore, derived a revenue of £12,000 per annum from them. T. bicornis, the Ling of the Chinese, has a fruit like a bull's head; the seeds of this plant also form a considerable article of food.

The Chinese mode of gathering this description of food is thus described by Fortune:—Leaving the old town (Kea-hing-foo, in the great Hang-chow silk district) behind us, and sailing westward, we entered a broad sheet of water of considerable size, which is probably part of, or at least joins, the celebrated Tai-ho lake. The water is very shallow, and a great part of it is covered with the Trapa bicornis—a plant called Ling by the Chinese. It produces a fruit of a very peculiar shape, resembling the head and horns of a bullock, and is highly esteemed in all parts of the empire. I have seen three distinct species or varieties, one of which has fruit of a beautiful red colour. Women and boys were sailing about on all parts of the lake, in tubs of the same size and form as our common washing-tubs, gathering the fruit of the Ling. I don't know of any contrivance which would have answered their purpose better than these rude tubs, for they held the fruit as it was gathered as well as the gatherer, and at the same time were easily propelled through the masses of Ling without doing the plants any injury. The sight of a number of people swimming about on the lake, each in his tub (see p. 214), had something very ludicrous about it.

Trapa natans.

To get the horny-looking seeds of this plant to germinate in this country, it is necessary that the water in which they are placed should range in temperature between 60° and 80° Fahr. After germination the plants grow quickly, and soon show their pretty roundish floating leaves over the surface of the water. They thrive best in a house intermediate between an ordinary stove and greenhouse while they are young, but as they advance and the weather out-of-doors gets warmer, they may be safely removed to any pond or tank where the water is not impure. In this way the plants continue more healthy, flower better, and ripen their seeds with more certainty than they do when kept in a warm house. At Glasnevin Trapa natans is cultivated in a small pond or rather tank outside the Victoria Regia house, which has a pipe of 2 inch bore, connecting it with the Water Lily pond inside the house. When the latter overflows, the heated water is received into the small tank outside, by which means the temperature of the water is considerably increased. Under this treatment the Trapa grows vigorously, and ripens seeds annually, which are allowed to fall to the bottom and to remain there during the winter. After the Water Lily house is put "to work" in April, the Trapa soon appears in the outside tank, and spreads rapidly over the surface of the water. This tank is simply built with bricks and cement, and is about 15 feet long by 6 feet wide. It gets no heat during winter, and is frequently frozen over, yet a number of half-hardy aquatics thrive well in it, such as Limnocharis Humboldti, Pontederia cordata, Sagittaria obtusifolia, &c. Nymphæa gigantea and Nelumbium luteum have both flowered well in it during the summer, but they perish if not removed to warmer quarters in winter. D. M.

HARDY FOREIGN FERNS.

(*Continued from p.* 125.)

Adiantum pedatum.—This is a noble deciduous species from North America, and one which no collection of Ferns, however small, should be without; the fronds are pedate and spreading, supported upon jet black erect stems; the pinnæ are numerous and of a vivid green, rendering it at once a most conspicuous and beautiful object.

Athyrium Goringianum pictum.—A near relative of the Lady Fern of our woods, producing long, pendulous, somewhat lanceolate fronds, the ground colour of which is dark green, but the rachis is deep red, having a greyish band on each side, giving it a distinct and handsome appearance. It comes from Japan.

Botrychium virginicum.—This plant is common throughout the United States of America as well as in Canada, where it is called the Rattlesnake Fern. The fronds are dark green, bipinnately or tripinnately compound, when fertile, producing, in addition and separately, numerous little spikes of bell-like sori. This plant thrives best in a well-drained position, and during winter it should have some litter strewn over and about its crown and roots.

Botrychium lunarioides.—In general appearance this resembles B. virginicum, but the segments of its dark green fronds are quite oblique, and of greater substance than those of that species; it should be treated in the same manner as B. virginicum. It is a native of North America.

Cyrtomium falcatum.—This is a grand and distinct plant for the open-air fernery, where, however, it frequently becomes deciduous, whilst, if grown indoors, it is evergreen; the crown is densely clothed with large dark brown chaffy scales, from which the pinnate fronds rise and attain a length of from one to two feet; the pinnæ are some six inches long, elliptic, lanceolate in shape, and dark shining green in colour. It is a native of China and Japan.

Cystopteris bulbifera.—This beautiful species grows from 12 to 18 inches in length, the fronds being bipinnate and deeply incised, the colour pale green. It forms a quantity of bulbules on the lower side—a property which has given rise to its name; these fall off when the fronds are mature, take root, and soon form a nice mass on the rockwork. It is a native of North America, and has been long in this country.

Cystopteris tenuis.—This beautiful kind is also a native of North America, and should be planted in the most shady portion of the rockery, in order to keep it from starting prematurely into growth. The fronds are ovate-lanceolate in shape, bipinnate; when strong, 9 inches high, and deep green in colour.

Dictyogramma japonica.—An erect, bold-growing Japanese Fern of great beauty and interest, known perhaps better to some by the name of the hardy Gymnogramma. It differs, however, from Gymnogramma, in having netted veins. It usually grows about 2 feet high, the fronds are pinnate, frequently bipinnate at the lower part, pinnæ some 8 or 9 inches long, lanceolate in shape, and dark green. The large entire pinnæ, which are beautifully reticulated with the sori, render it a distinct and handsome plant, forming a striking and pleasing contrast to those species with finely-cut fronds.

Lastrea varia.—This is a fine, robust-growing plant, to be found in some collections under the name of L. opaca. The fronds vary from 1 to 2 feet in length, and are broad and much divided; the colour is a very dark shining green, the large jet black sori being an additional ornament to this fine species. It is a native of Japan and China.

Lastrea erythrosora.—This is also a fine species, producing broad bipinnate light green fronds, which vary from 1 to 2 feet in length. The sori are large, and, when young, covered with a bright red indusium, forming a very handsome and distinct feature. It is a native of Japan.

Lastrea Sieboldii.—A fine bold Japanese plant, the fronds of which are usually about 18 inches long, pinnate and dark green; the pinnæ are large, being some 6 inches long by 1 inch broad, bearing on the under side a profusion of very dark brown sori. It is a most distinct and desirable plant.

Lastrea hirtipes.—This plant requires a little protection during winter. The fronds are erect, some 2 feet long, pinnate, and somewhat narrow for their length; pinnæ serrate at the margins, and dark green in colour; the sori are very large, whilst the stipes are densely clothed with black hair-like scales. It is a native of Northern India.

Lomaria alpina.—This is a dwarf dense-growing New Zealand species, the barren fronds of which are broadly lanceolate, pinnate, about 6 inches long, and very deep green; the fertile ones are about the same length but not half the width; it is perfectly hardy, and a most desirable plant.

Lomaria chilensis.—This noble Fern seems to have become exceedingly scarce, a circumstance much to be regretted, for it is undoubtedly one of the finest of all Ferns for the open-air Fernery; the fronds are from 2 fo 6 feet in length, according to the treatment received, and are beautifully curved; they are pinnate, bearing many pairs of large, entire, very dark green pinnæ; the fertile fronds are also pinnate, but much contracted. It is a native of Chili.

Lygodium palmatum.—This is a singular plant, which all lovers of Ferns should cultivate. It is the hardy representative of a genus of climbing Ferns, all of which are very handsome; and although this particular species seldom exceeds 2 feet in length, it is most interesting; the fronds are palmate; sometimes three-lobed, but frequently five-lobed; the upper portion is usually fertile and contracted. In exposed situations a little litter should always be scattered over this species during winter. It is a native of North America. –*Villa Gardener.*

PRUNING ROSES.

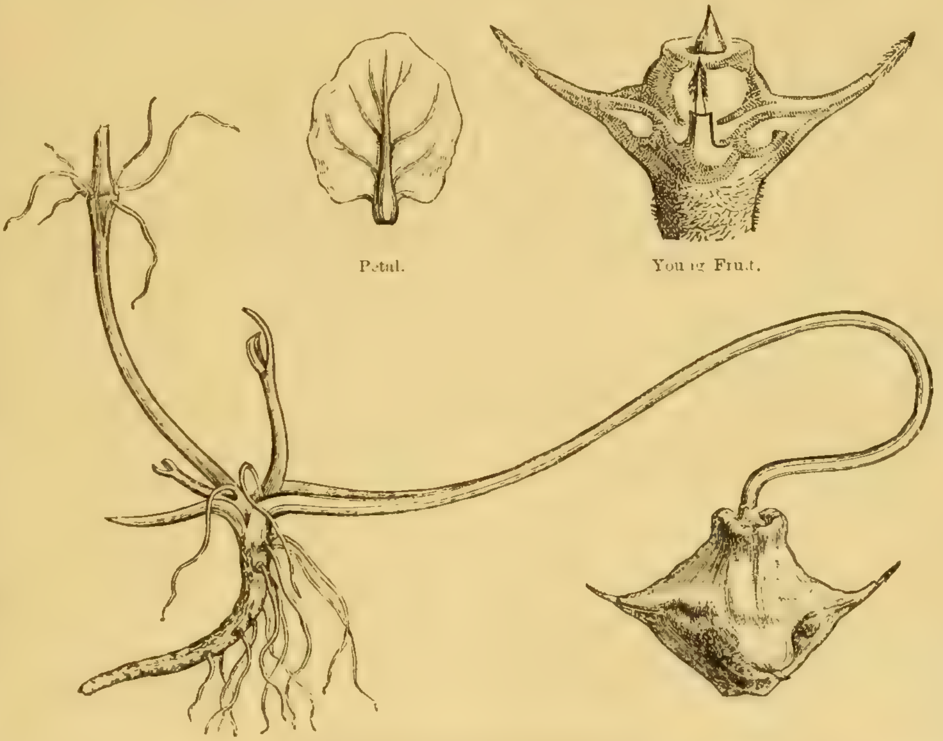
One of the most important operations requiring attention in the Rose garden during March is that of pruning. Some growers have expressed an opinion that November is a good time for pruning Roses, but the greater number recommend it to be done in February. I am altogether opposed to the system of autumnal pruning; and, although I will not go so far as to assert that February is too early in all seasons, I am strongly of opinion that March is quite soon enough for hardy sorts, and too soon for Chinas. By hardy Roses I mean the whole tribe of summer bloomers, generally comprised under the divisions of moss, Provence, hybrid Provence, French, damask, alba, hybrid China, hybrid Bourbon, hybrid Noisette (a distinct section, although not generally recognised), Austrian Briar, Sweet Briar, Scotch, and the several families of climbing Roses. Of autumnal bloomers the perpetual moss, damask perpetual, hybrid perpetual, and Bourbon families must be included in the category of hardy Roses. Shall any especial order be observed in pruning these different sorts, or shall they be taken hap-hazard? I have seen it laid down in books that the moss, Provence, French, alba, damask, and Austrian Briars should be first pruned; then the hybrid China and hybrid Bourbon, and next the damask perpetual, hybrid perpetual, perpetual moss, and Bourbon. Now I beg to differ from this view of the case. I recommend, whether large or small, to apportion the plants in three equal parts, taking care that the different families are fairly distributed among the whole, and to have three great prunings—namely, at the beginning, the middle, and the end of March. Rose pruning is of three kinds, viz., close pruning, long pruning, and moderate pruning. The first method is applicable to all such Roses as are of dwarf habit and compact growth, producing shoots on which the bloom-buds are closely set. In this list may be included the families of moss, Provence, Gallica, alba, damask, and Austrian Roses. All these require close pruning; that is, the shoots should be cut back to within an inch or two of the old wood, leaving only two or three buds at the base. Long pruning must be used for such sorts as are very vigorous growers; many of these produce shoots from six to ten feet long, and if these were subjected to the close system of pruning, not a flower would be produced. The sorts requiring long pruning include nearly all the hybrid China, some of the hybrid Bourbon, the more vigorous among the Bourbon, and a large proportion of the Noisette tribes. In all these the shoots must be well thinned, taking care to remove those likely to militate against the production of a handsome symmetrical head; the remaining shoots must be shortened to a foot or eighteen inches, according to the habit of the plant. There are a few of the hybrid Chinas in which it is necessary to leave the shoots nearly their entire length, merely removing a few inches of their extremities; of sorts requiring this treatment, the fine old varieties, Beauty of Billiard, Brennus, and Fulgens are examples. In the course of a few years Roses thus treated will become straggling and unsightly; when this occurs they must be cut back to within an inch or two of the crown, when fresh buds will push and a new head be formed. If this is done immediately after the plant has bloomed, there will, in ordinary summers, be plenty of time for the new wood to mature itself, and thus the loss of one season's bloom will be avoided. If the wounds are immediately covered with some styptic, there will be no bleeding; otherwise the plant might be much exhausted, if not actually killed, by the loss of its juices. Moderate pruning is a sort of compromise between the other two methods. It consists in shortening the shoots to within six or seven inches of the old wood, and is the form of pruning best suited to the more robust-growing varieties of French, damask, and hybrid Provence Roses, the most vigorous of the hybrid Chinas and hybrid Bourbons, and those of medium growth among the Bourbons and hybrid perpetuals. The pruning of the China and tea-scented Roses, together with such of the Noisettes as claim affinity with them, should be deferred until April.—R. D.

SEDUMS AND SAXIFRAGES.

It is satisfactory to perceive that plants belonging to these and kindred genera are becoming better known and appreciated than they used to be. The marvel, indeed, is, that a tribe of plants containing some hundreds of species and varieties should have remained so long in obscurity as it has done, especially as among them may be found plants of every possible variety of form and every conceivable degree of beauty, from the most inviting green velvet-like cushion to the compact globular mass which, when in flower, looks like some miniature mountain beset with fairy gems. First there are the encrusted varieties—beautiful little rosette-looking things, glaucous or silvery in colour, so profusely fringed with pearls, that one is led to wonder whether they are plants or jewels. They are so variable in respect to habit, that while some kinds would soon cover with most beautiful green, rocks, quarries, scars, and similar places, others would almost grow in a thimble. A whole garden might, indeed, be made interesting with Saxifrages and Sedums alone, and it would have this advantage, that it would look equally beautiful in winter and summer. Do you want someting cheerful to look at during the dead season of the year? Wander into the Saxifrage garden and contemplate the beautiful masses of emerald and pale green, and yellow green and blue green, that will meet you at every turn. Are you blinded with too much colour in the dog-days, "cool your eyes," not on "the Parsley bed," but on charming masses of sea-green Saxifrages. As to clothing and ornamenting rockwork, whether it be a miniature morsel under a glass-shade, or hundreds of tons of granite, artistically put together, nothing can, nor ever will, equal Saxifrages. Sedums and Saxifrages, in short, are alike suitable for the smoky city and the open garden in the country. London Pride (Saxifraga umbrosa) and some others, such as S. glacialis and cernua, for instance, grow equally well in our great metropolis, and in the pure rarified air of mountain peaks and Alpine passes. Some, again, as Saxifraga nivea, live almost within the snow-line; others, as S. Fortunei and japonica, are at home in the temperate valleys of China and Japan; while S. Icelandica flourishes in the Arctic regions. My collection of these interesting plants is but a small one, but I trust that my partiality for them will enable me to point out their beauties, and their utility and adaptation for various decorative purposes.

SAXIFRAGES.

These fortunately, considering the vastness of their numbers break themselves up into well-marked tribes or divisions, a circumstance which, while it adds to their diversity and beauty, greatly facilitates arrangement, both for pleasure and study. The first section which I shall notice is what may be termed the "mossy" or "hypnum" group. These consist of spreading carpet-like plants, such as S. muscoides, Schraderi, glacialis, and others; or of such as assume a more compact, round, cushion-like form, as densa, tenella, virescens, or lævis. Some belonging to this section assume a frosty or glaucous tint, as Gmelini and palmata. The plants included in this section are, perhaps, more accommodating and useful for decorative purposes than those in any of the other divisions. Another small, but very effective group, is the Staghorn division, consisting as it does of compact masses, with rigid, leathery, much-divided foliage; this includes such sorts as ceratophylla. Another group, and one very unlike any of the others, both as regards foliage and flowers, is that of which "oppositifolia" may be taken as the type; of this there are four varieties, viz., oppositifolia major, retusa, pallida, and alba; masses of the latter, flowering in February or March, might be mistaken for snowdrifts. Perhaps, however, the most exquisite of the Saxifrages is the encrusted tribe, so called on account of the margins of the leaves, which are silvery, being studded and beaded with pearls. These include such sorts as rosularis, intacta, intacta minor, pectinata, incrustata, and others. So small is intacta minor that half a dozen plants of it might be grown in a watch-case. This section contains the very best of the Saxifrages, of which the most lovely species known is S. longifolia, a rare plant belonging to this section, and with which S. lingua has for a long time been confounded. Another group is the Strawberry group, of which the Wandering Jew (S. sarmentosa) may be taken as the type; S. japonica variegata also belonging to this group, is a startling plant when well coloured. To the umbrosa, or "London pride" group belong thick leathery, deeply-toothed plants, mostly with round or ovate leaves, such as those represented in the kinds called reniformis or ovalifolia. There is, too, a subdivision of this group, with deeply-toothed, elongated foliage, in which may be found such kinds as Andrewsii, Guthriana, and dentata, and lastly, there is a multitude of others, such as tricuspidata, hieracifolia, asiatica, and granulata, that do not associate with any one division.



Petal.

Young Fruit.

Trapa natans and its fruit. (See p. 208.)

It has already been hinted that a large rockery wholly decorated with Sedums and Saxifrages would have a pleasing effect, and so it has when kept in good order, *i.e.*, when one kind is not allowed to overgrow its neighbours so as to destroy its individuality; for when several dozens of these plants are permitted to run together in the form of a sod, the rockery on which they grow becomes little better than a mound of turf. Damp, dirty, mortarless walls, even in back-yards and courts in cities, may be made interesting by having bits of the various mossy Saxifrages thrust here and there into their chinks. Their deep green tufts have a charming effect every month in the year in places where even Ivy itself will scarcely live. The following twelve kinds are suitable for this purpose, viz., Schraderi, muscoides, palmata, incurvata, virescens, leptophylla, elongata, tenella, glacialis, densa, lævis, and propendens. Those who may not have walls such as those alluded to, may still enjoy these pretty little Saxifrages, by keeping them in a glazed frame of such dimensions as they may think proper, regarding sun as to them of no importance; such a case could be set in whatever place could be found for it; this would afford to its owner interesting recreation for every day in the year. The following twenty-four sorts would form a nice collection for a one-light frame, viz., S. recta, Maylii, intermedia, densa, pulchella, Guthriana, capillaris, reniformis, Geum densa, pallida, Aizoon, aizoides, aspera, propendens, tricuspidata, ceratophylla, intacta, virescens, retusa, Bucklandii, umbrosa variegata, dahurica, dentata, and palmata. These have all a fine compact habit, and great diversity of form. Those who would wish to have collections of Saxifrages and Sedums combined in one frame might add the following twelve of the latter, viz., Sedum Sieboldii, Ewersii, pulchellum, hispanicum, acre variegatum album, dasyphyllum, Telephium variegatum, kamtschaticum, tenellum, stellatum, and teretifolium. These would form a beautiful combination, and although all of them have a neat habit, yet they are all highly diversified as to form and colour.

Ferns have so long monopolised such contrivances as glass shades and cases, that it requires some degree of hardihood, even to hint that other plants may be found that are equally as interesting. Nevertheless, a case containing an assortment of miniature Saxifrages, Sedums, and perhaps Sempervivums, planted on miniature rockwork would be a charming object. The following twenty-four sorts are suitable for this purpose, and would thrive in the sunniest window—viz., Saxifraga rosularis, longifolia, densa, Aizoon, intacta, incrustata, pallida, pectinata, juniperina, Andrewsii, umbrosa, dentata, virescens, glacialis, capillaris, umbrosa variegata, pulchella, tricuspidata, Bucklandii; Sedum glaucum, grandifolium (truly beautiful), dasyphyllum, Ewersii, pruinosum, and spirale. All these are beautiful in form, and possess much richness of colour, varying in hue from the emerald green of Saxifraga densa to the silvery tints of Sedum dasyphyllum. Sedum grandifolium has also prostrate, rosette-looking, silvery tufts, the outer leaves being of a ruby red. Many of these never exceed the size of a crown-piece, and most of them may be kept within very small bounds. No twenty-four dissimilar Ferns could be grown in the same space as these, and it is questionable whether any other twenty-four truly hardy plants could be brought together that would live and thrive, and want so little attention and give so much satisfaction as these. The following twelve kinds are real gems amongst Saxifragas, and all of them may be grown on a bit of rockwork under a glass shade—viz., Saxifraga Aizoon, Aizoon compacta, dahurica, longifolia, intacta, intacta minor, rosularis, pectinata, incrustata, densa, Guthriana and cuneifolia. Rocks, ravines, scars, old quarries, and similar places, near drives, may be made highly interesting when planted with the cushion or fleecy Saxifrages. There are perhaps as many as thirty or forty sorts that would be suitable for this purpose. Many of our miniature Saxifrages are peculiarly adapted for delicate tracery or scroll-work, forming, as they may be made to do, lines or bands of green and silver or grey. The following are adapted for this purpose, viz.:—S. capillaris, Guthriana, dahurica, umbrosa dentata, densa, Andrewsii, green; intacta, rosularis, angustifolia, pectinata, incrustata, recta, silver. The chief use to which Saxifrages may be put, however, is the winter and spring decoration of flower beds, for which they are invaluable. It is a question whether a design, in the dead of winter, tastefully planted with Saxifrages, would not even surpass any amount of summer decoration that could be bestowed on it. Nothing in the way of evergreens, however compact, can equal a combination of these charming plants; prepared in spring or early summer in the reserve garden, they may be planted whenever wanted—July or Christmas. They are adapted for every size of bed, from 8 or 10 feet down to the smallest pincushion.

The following are a few combinations suitable for large beds, viz.:

—Saxifraga lingua edged or mingled with densa; virescens edged, with Geum densa; palmata and hypnoides edged with recta; tricuspidata edged with Geum gracilis; geranioides edged with lingua; propendens edged with pulchella.

Medium-sized beds may be planted as follows:—ceratophylla edged with densa; serratifolia edged with capillaris; pulchella edged with Aizoon; tenella edged with Hostii; Geum densa edged with pallida; Gmelini edged with dahurica.

For minature beds the following are most suitable:—Andrewsii edged with intacta; rosularis edged with densa; dahurica edged with pectinata; densa edged with incrustata; capillaris with intacta minor; pallida with rosularis.

Though these lists contain but few kinds, yet, like the changes that may be rung on bells, the alterations that may be effected with them are endless. THOS. WILLIAMS.

Bath Lodge, Ormskirk.

Plants for a Steep Bank.—If your correspondent, "A Country Parson," had told us in what county he resided, it would have been easier to help him. But Solomon's Seal (Polygonatum) will grow anywhere in England in such a place, near the bottom, if undisturbed at the root. The large Periwinkle (Vinca major) will do next above it, and make green tufts all winter. The Forget-me-Not (Myosotis dissitiflora and alpestris), alternated with Eschscholtzia crocea, allowed to seed themselves, and to cover their old stumps with crowns of their own dead leaves all winter, will look lovely from April to October (the Myosotis alpestris flowering a second time if the first heads are trimmed off about July). Aubrietia purpurea would edge the top, and tufts of variegated white Alyssum would look well against it. Several sorts of Oxalis like northerly banks, and so do Snapdragons. The latter should be raised from seed elsewhere, and continually shifted, so as to prevent their running too much to branching roots, which interfere with their flowering. They should be planted out on the bank to remain, about the end of September, and slightly protected (with bits of Bracken twisted about them) from severe frost. Irish and English Ivies would creep up the bank, but they are apt to kill other things. Nearly all the Aspidium (Polystichum) race of British Ferns, and the Lomaria spicant will do well there also. The chief rule is never to allow a gardener's ruthless spade near the bank after it is once well cleansed from weeds, and planted. Let the plants go their own way, and surface-weed by hand or small hooked spud only. Occasionally the surface should be loosened in dry weather with a small fork. Can your readers tell me, in return, why my Ixias and Sparaxis always come up green, and remain so all winter, and then die gradually away in spring, when they ought to send up flowers? The roots look healthy. This has happened four years in succession.—KING'S NORTON.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Crocus veluchensis.—This pretty purple species, from the mountains of Atolia, is now in bloom with me. It is closely allied to C. vernus. The petals are, however, much broader and blunter at the tip; the flower-stalk is much shorter and the sheath longer and broader. The flower appears when the leaves are only just showing. Near the outside tip of each petal there is a conspicuous blackish purple belt. It is a tender species.—H. HARPUR CREWE, *The Rectory, Drayton Beauchamp, Tring, March* 8.

The Sweet-scented Pond-weed (Aponogeton distachyon).—Mr. M'Nab, I think, must be mistaken in attributing the well-being of this aquatic in the Botanic Garden, Edinburgh, to the action of springs at its roots. I have seen it thrive well in ornamental water where the bottom and sides were cemented. In a pond in the gardens of Lord Portman, at Bryanston, this Pond-weed grows and blooms profusely, and often ripens seeds which produce hundreds of young plants. At Castle Ashby it is planted in pots that stand on the hard bottom of a circular pond, and even in that position it grows much more luxuriantly than in the deep mud of the fish ponds.—G. B.

Cerastium Edgings.—What is the best way of planting Cerastium bordering to beds on a lawn? Ought they to be renewed, or allowed to remain year after year? For two years we had a very effective edging kept cut, about 9 inches wide, but it has looked poor and irregular since, though weeded and slightly renewed. How am I to improve it?—U. J. P. N., *Rugby*. [Cut over your Cerastium edgings and lift the plants; dig the ground on which they grew, and add some leaf-mould to it: then divide the plants into little rooted tufts, and plant them about 3 inches apart. This should be done now, and the plants will soon form nice edgings, which should be renewed in this manner every second year.]

The Gigantic Dog's-tooth Violet.—Erythronium giganteum (Lindl.), E. grandiflorum (Pursh).—This fine addition to our hardy spring-flowering plants, when better known, will receive a general welcome. It bears several large and handsome flowers upon one stem. In very strong wild specimens as many as ten blossoms are found on single stalks, 1¼ foot high. The colour is exceedingly variable—usually it is of a creamy-white, delicately shaded with pink or purple. Some are white, others Lemon-coloured, and others again deep red-purple. It remains, however, yet to be ascertained whether two or three "forms" inhabiting large and widely spread regions may not eventually prove to be specifically distinct from each other. The flowers of E. giganteum are individually 3 inches across, and the petals broad. Its leaves are very richly and heavily marbled with purplish brown.—B.

PUBLIC GARDENS.

THE ROYAL GARDENS, KEW.

BY PROFESSOR OWEN.

You have shown your interest in the "Kew Question," by admitting the "Statement"[*] in which I gave reasons for the space assigned in my "Plans for a Museum of Natural History," on the assumption that the National Herbarium would continue to be maintained in the metropolis, and by giving Dr. Hooker's "Reply"[†] to that statement. I, therefore, trespass upon you with remarks thereon, especially upon the strongest, if not sole, ground which the Director has urged upon the administration for having the "first-rate herbarium" at Kew Gardens.

This ground is an appeal to the increase of the plants new to science at Kew since the time when the naming of such was done in London, and an estimate of the latter metropolitan work, which work had appeared to me to afford some ground for thinking it might have been, and still might be, continued to be done in London.

The naming of plants growing in a botanical garden is the work of the nomenclative botanist. To determine the species received there, which may be unknown to the physiological botanist in charge of the living plants, requires their comparison, or that of their characteristic parts, with the dried specimens in a herbarium. For this end the more complete the herbarium the better is it for the purpose. To deposit the specimens collected in Australia or in the vicinity of the Congo, at a given period, in one museum, and the specimens there collected at a subsequent period in another museum, detracts from the utility of both. The National Herbarium ought to be "one and indivisible." Administrative wisdom will not much longer endure two competing museums carrying on their competition at the public cost.

Dr. Hooker contends that his museum is needed at Kew for "keeping accurately named public collections that occupy 300 acres and are estimated to contain 20,000 species."[‡]

Admitting, as a logical but non-botanical statesman would do, from the relation of this averment to my argument, that the plants of 20,000 species growing on such an acreage might call upon the director of the gardens to consult a herbarium for the name of each, and that the like labour might be imposed upon him in order to name the additional "literally thousands of plants from other botanic gardens and nurseries in England and similar institutions abroad,"[§] transmitted to Kew for that purpose,—even then a large-minded administrator might take into consideration the question whether the interests of all other students, British and foreign, of a National Herbarium need be, or ought to be, sacrificed to the personal convenience of the director of the Royal Gardens—whether it were administratively wise or just to adopt a recommendation "compelling the resort of all botanists to Kew."[||]

Every botanist knows that the statesman would have drawn an erroneous inference from the director's "Reply." The facts for his chief's guidance were the number annually of species new to science which were, in such years, growing at Kew, and which there first received their specific names, a list of which might have been advantageously appended. To substitute for this important "constant," vague statements of "twenty thousand," and "literally thousands of plants" growing at, or brought to, Kew, and wanting names, with the acreage of ground liberally added for the pleasure of the public to the Royal Gardens, was not the information required for right judgment on the point at issue, nor such as was calculated to increase the Minister's estimate of the worth of a "Report."

To the argument which it was my duty to submit in favour of a continuance of the one great herbarium in the locality adopted for it by the State before the successors of the Aitons began to develop their competing collections of dead plants at Kew, viz., the application of such herbarium to the "naming" requirements of the Aitons, Dr. Hooker contrasts his statement of nomenclative work, above animadverted on, with what he defines as the "naming of a few and rare plants cultivated at the beginning of the century in a private garden of nine acres, probably at no time containing more than 4,000 species."[¶]

The Royal Gardens at Kew were developed for the service of botany. His Majesty King George III. called to his councils, for the realization of this wise and beneficial resolve, Sir Joseph Banks.[*] The number of new species brought home by Banks and Solander strengthened the royal resolve, if their collections of living plants from Cook's circumnavigatory voyage did not initiate the "Royal Gardens." Of these the development was rapid, under the auspices of Banks and the able gardeners whom he recommended, aided by the Banksian Herbarium, and the nomenclative botanists he placed in charge thereof. So developed, the Royal Gardens were freely open to the visits and uses of botanists. It is part of the history of the science.

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[*] "Return to an Order of the Hon. the House of Commons," 25th July, 1872, p. 169.

[†] "Return," &c., 8th August, 1872.

[‡] "Return to an Order of the Hon. the House of Commons, 8th August, 1872. 'Reply,'" &c., par. 7.

[§] *Ib.*, par. 7.

[||] J. D. Hooker, reply to Q. 6,684, "Royal Commission on Scientific Instruction."

[¶] *Ut supra*, par. 7.

In the dedication to the King of the "Hortus Kewensis," Aiton defines it as:—"A work rendered necessary to the public, not only by the number of valuable plants continually sent home by your Majesty's collectors abroad, but also by the extensive influx of curious exotics poured into it of late by your Majesty's subjects, anxious to aid, by their individual exertions, that magnificent patronage which has rendered Botany a favourite pursuit among all classes."[†] This definition of the "Royal Gardens" as they existed in 1813, continued to be applicable up to the period when they were formally, as heretofore they had been virtually, in relation to botanical science, "Public Gardens." I submit that to define, in an official statement, the scene and sphere of the labours of his predecessors as a mere "private garden" is a rhetorical artifice unworthy of a successor of the Aitons and of the important administrative question at issue.

Next, as to the averment of "the few and rare plants" in this garden, "probably at no time containing more than 4,000 species."[‡] Aiton, in the second edition of the "Hortus Kewensis" (1813), gives the number at 9,800 species. John Smith, curator of the same garden up to 1864, writes:—"About 13,000 species had been noted as contained in the gardens, but the greatest number at any time was 11,000 species."[§] But the numbers, like the 20,000 species of Dr. Hooker, are outside the question which is truly touched by statements yet to be given of the percentage of species new to science requiring a continuance of the herbarian comparisons for their determination. Respecting which work, so truly and touchingly acknowledged by the younger Aiton,[||] I regret to be compelled to remark, that, to stigmatise the "Botanical Works" devoted to the determination of the new species of plants in the "Royal Gardens" as a mere "naming of a few and rare plants cultivated at the beginning of the century"[¶] is excusable on the sole plea of ignorance, and could not, I think, be hazarded by any botanist cognizant of, and capable of appreciating, the brilliant period of the history of his science during which the Banksian herbarium was applied to the nomenclative needs of the Royal Gardens at Kew.

The "Prodromus Floræ Novæ Hollandiæ" (8vo, 1810), might, by a caviller, be said to be mainly a description of dead plants; but its author had observed them living in their native land; and the work, by its combination of anatomical and physiological research with the taxonomic part of botany, made an epoch in the science.

The Government botanical specimens, living and dried, successively brought home from the time of Cook and Banks to that of Flinders and Brown, were disposed, according to the administrative wisdom of the time, the living plants in the gardens at Kew, the dead ones in the herbarium at London. Here was carried out, by the librarians and keepers, the work of naming and describing the new species, the Kew plants duly receiving those assigned to them: the majority of Australian species represented in the Royal Gardens bear the names given them by Robert Brown. Dr. Hooker's definition of this work must also include:—1. "Genera et Species Plantarum Cruciferarum, necnon Generis Cleome, quæ in Horto Kewensi coluntur;" 1812. 2. "Genera et Species quædum Plantarum Leguminosarum, quæ in Horto Kewensi coluntur;" 1812, 1813. 3. "Genera et Species quædum Plantarum Myrtacearum, quæ in Horto Kewensi coluntur;" 1812. 4. "Genera et Species quædum Plantarum Compositarum, quæ in Horto Kewensi coluntur;" 1812. 5. "Genera et Species Plantarum Orchidearum, quæ in Horto Kewensi coluntur;" 1813. 6. "Genera et species Plantarum e variis Familiis, quæ in Horto Kewensi coluntur;" 1813.

These works, by Robert Brown, performing in London, for the behoof of the Royal Gardens, the labours of the present "dead plant staff" at Kew, have been, through a truer estimate than Dr. Hooker's, selected by the "Ray Society" for republication in their issue for the year 1867. They were contributed to botany, as metropolitan herbarian work, leaving the officers of the Royal Gardens free for the legitimate physiological labours and applications of their collections of living plants, and were published without any special grant from the Treasury, either for editing or writing.

The importance of basing on fact the question as between the British Museum and Kew, leads me to think I may be permitted to trespass with a few subsequent examples of such works by Brown and his successor. The botanical collections of the Consul-General of Egypt being transferred to the metropolitan herbarium, the keeper contributed, as an "Appendix" to Salt's "Voyage in Abyssinia," the "List of New and Rare Plants," collected during that voyage, 1814. The plants of tropical Africa collected in the expedition by Captain Tuckey, R.N., to explore the river Zaire, or Congo, were described in the "Observations, Systematical and Geographical, on the Herbarium collected in the vicinity of the Congo," by Robert Brown, 1818. The entire arctic herbaria brought home by Captain John Ross, R.N., now in the botanical department of the British Museum, were described by the keeper, in his "List of Plants collected on the coasts of Baffin's Bay," &c., 1819. Captain Scoresby having, in like manner, deposited his herbarium in the metropolitan one, it was described by the keeper in his "Catalogue of Plants found in Spitzbergen," as an Appendix No. V. to "Scoresby's Account of the Arctic Regions," 1820. The botanical acquisitions during Parry's famous Arctic Expedition, have their scientific value in the "List of Plants collected in Melville Island in the year 1820, by the Officers of the Voyage of Discovery under the orders of Captain Parry, with characters and descriptions of the new genera and species," by Robert Brown, &c., 1823. The collections made in the explorations of Africa, by Denham and Clapperton, afforded the subjects for Brown's "Observations on the Plants of Central Africa" in the appendix to the narrative of their travels (1826). The herbaria of Captain Stirling's exploration of the Swan River District, Australia, having been deposited in the British Museum, were described in the Keeper's "General View of the Botany of the Vicinity of the Swan River" (1832). This was followed by the publication, in 1849, of the "Botanical Appendix of Captain Sturt's Expedition into Central Australia," by Robert Brown, F.R.S., &c. (1844). During the retention of the "Dried Specimens of Plants in the East India Company's Museum," the Keeper of the Herbarium of the British Museum contributed "Names and Notes on Indian Plants," in the Numerical Lists of such specimens, 1828-1849; also "Notes and Observations on Indian Plants," in the "Plantæ Asiaticæ Rariores," of Wallich. The "Flora of British India" was further elucidated by Robert Brown and his then assistant, John Joseph Bennett, Esq., F.R.S. (afterwards his successor in the British Museum), in the "Plantæ Javanicæ Rariores" of "Horsefield," at that time (1838-1852) curator of the Natural History of the Hon. East India Company.

Dr. Horsefield acknowledges his "great obligations to Mr. Brown." "The examination and arrangement of my herbarium, the laborious duties connected with the superintendence of the figures contained in the work, and the time devoted to the description of the subjects, are by no means the only marks of friendship which I have received from that distinguished botanist." "I have the satisfaction to state that J. J. Bennett, Esq., Mr. Brown's assistant in the botanical department of the British Museum, was found willing to prepare for the press such articles as were left unfinished by Mr. Brown, and likewise to co-operate generally in the preparation of the work."

I submit that the number of plants now cultivated at Kew which bear the names assigned to them in the series of works above exemplified, extending over a period of half a century, is not truly defined as "few" or as "being cultivated at the beginning of the century in a private garden of nine acres."[*]

The successors of Brown are as willing, perhaps as competent, to perform the duties of the National Herbarium in relation to the naming needs of the National Botanical Garden as was their great predecessor.

After the statement that "Kew is an establishment that is annually called upon to name literally thousands of plants from botanic gardens and nurseries in England and similar institutions abroad," Dr. Hooker concludes the paragraph with the remark that, "Large classes of plants are now cultivated that must be named in the houses where they grow; and many more, the tropical especially, could not be sent to a distance to be named, without serious damage in the transmit."[†] Surely these conflicting propositions betray the confusion of mind attendant on an attempt to defend the untenable. Some of the "literally thousands of plants annually" sent from continental and provincial gardens to Kew to be named must be in the condition of those defined as "large classes," incurring "serious damage" in the transmission. It would be desirable, therefore, to shorten the journey as much as possible. Under present railway conditions, they must reach some London terminus *en route* to Kew. Why not receive the needful naming at the National Herbarium in London? The van-carriage to the "London and South-Western station," with probable change of train at the "loop-line," in order to reach the "competing herbarium," would be saved.

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[*] "Du reste, s'il ne donnait pas officiellement au Roi des conseils politiques, il n'en était pas moins pour lui un conseiller trés-réel et tres utile. Il partageait des occupations rurales, il lui faisait connaitre les productions intéressantes des pays éloignés, et entretenait ainsi en lui ce goût pour la nature, qui avait deja valu aux sciences tout d'acquisitions, et qui leur en valut davantage, à mesure que l'example du Prince fut imité par les grands. C'est ainsi que, pendant trente ans, l'Angleterre a été en quelque sorte le centre de la Botanique et le marché des plantes et des arbustes nouveaux."—CUVIER, *Eloge de Banks*, p. 82.

[†] Op. cit., Vol. I., p. v.

[‡] J. D. Hooker, in "Return," &c., par. 7.

[§] "Introduction to Domestic Botany," 8vo, 1871.

[||] Op. cit., Vol. V., "Postscript."

[¶] Hooker, in "Return," &c., par. 7.

[*] J. D. Hooker, in "Return," *ut supra*, par. 7.

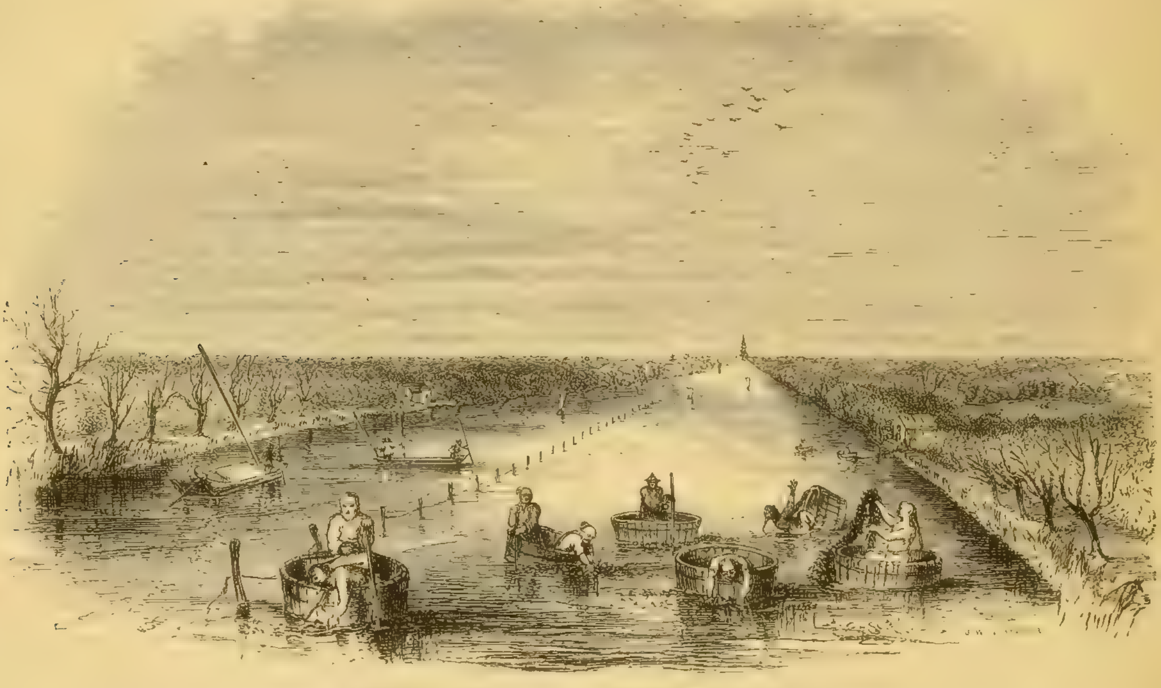
[†] "Return, &c.," par. 7.

Again—Were none of the subjects of the "extensive influx of curious exotics poured into the Royal Gardens"* (under the direction of the Aitons, in the condition of the tropical ones which, under the direction of the Hookers, "must be named in the houses where they grow?")† Perhaps the authors of the "Hortus Kewensis" brought the characteristic parts only of such plants to the metropolitan herbarium. Howsoever that might be, there, in London, the naming of the Kew plants was satisfactorily effected, and the work gratefully and gracefully acknowledged. I would, moreover, ask the attention of an administrator to the fact that the Aitons were thus, and under this division of labour, *directly* responsible to the Crown and the public for the physiological work in relation to the culture and naturalization of living exotics; their responsibility was not shifted to the shoulders of the herbarian botanist, nor their operations controlled or thwarted by him. Each had his appropriate sphere of work.

Mr. Bentham, P.L.S., in a letter admitted into the number of *Nature* for November 14, 1872, is indignant at the suggestion that officially reported failures in physiological operations at Kew Gardens might relate to the proportion of the director's time given to herbarian work. And in reference to the conditions under which the plants growing at Kew were named, before the gardens and their director were encumbered with collections of dried plants, he remarks, that the Banksian herbarium had not become "National" till after the demise of the founder in 1820—a remark akin to that which defines the botanical garden at Kew as a mere "private one" until it became formally, as before it had been virtually, applied to the advancement of science and the public good. The only distinction predicable of the metropolitan herbarium in its application to the nomenclative work at Kew before and after 1820, is one of locality, as between Soho Square and Bloomsbury. The Banksian herbarium and library, like the Royal Gardens, were always "National" in the sense of their free use to botanists for the advancement of botany. In the history of that science the name of Joseph Banks will continue pre-eminent and exemplary to statesmen, in his sagacious administrations for its true progress in every department—experimental, economical, and descriptive. Therefore it is in relation to the true help which a national botanical garden, library, and herbarium can render to botany that I respectfully commend the views and practice of Sir Joseph Banks to the administration of the time being who may take the question of the competing national herbaria into consideration.

No one had a truer, a more sincere regard for the well-being and advancement of his favourite science than Sir Joseph Banks. The formation of this herbarium and library; the choice of Dryander, Solander, Robert Brown, for their custody; his open hospitality to all men of science, the liberal use he made of his treasures during his lifetime, commend the deference of the administrator to Banks's posthumous dispositions. No man could form a truer view of the right places of collections of dead and living plants in their respective services to botany; after the King, no one had taken a warmer personal interest in the formation, development, and applications of the Royal Botanical Gardens, at Kew, than Sir Joseph Banks. His matured conclusions as to the best local conditions of the continued application, after his demise, of these several instruments to the progress of botany are manifested by the bequest of his herbarium and library to the British Museum, with a proviso that the then librarian, Robert Brown, should, as keeper of the National Herbarium, be at liberty to apply it to the naming of the plants in the Royal Gardens at Kew; add to this Sir Joseph's liberal provision for the continuance of the services of the accomplished artist Bauer in the delineation of the new and rare living plants at Kew. He knew that periodical visits of the head of the botanical department of the British Museum to the Royal Gardens would continue to ensure the maintenance of a correct nomenclature of all new species which might there be represented. To rest the claim for the super-addition at Kew of a "first-rate herbarium" for such a purpose is to put the question on a false issue. The disturbance of the locality of the National Herbarium ought to be decided on wider considerations than personal ambition or the alleged convenience of any particular garden. The interests of all botanical and horticultural establishments, as of every cultivator of botany, are concerned in the maintenance of the National Herbarium in the metropolis.

Sheen Lodge.



Gathering Ling (Trapa bicornis) in China. (See p. 208.)

The last tax across the Channel is a duty on Chestnuts. As Paris consumes no fewer than 10,000,000 Chestnuts yearly, it is reckoned that this tax will produce the modest sum of £28,800.

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* "Hortus Kewensis," *ut supra*. † *Ibid.*

WORK FOR THE WEEK.

PRIVATE GARDENS.

Conservatories.—Indoor plants have almost invariably started into growth, therefore, such as require a shift must at once receive that attention. Borders in which plants are growing should be lightly forked up, and if the soil is exhausted a dressing of loam, leaf-mould, rotten manure, or good peat may be added according to requirements. Some plants need more water than others, and in such cases neatly-formed basins of soil should be made around them, so as to retain sufficient for their wants without overflowing. This is an excellent time for transferring plants from pots to conservatory borders, and in doing so, disentangle and spread out the roots as much as possible. This may check growth for a time, but eventually, other circumstances being favourable, plants so treated will succeed better than such as are planted with the roots coiled up in a ball. Camellias, Rhododendrons, Acacias, &c., when grown in pots, are more under control than such as are planted out; but the latter are generally the most satisfactory, both as regards growth and bloom. Clianthus puniceus if too thick should have its shoots thinned out a little, so as to give sufficient light to the flowers. Passionflowers should be pruned well in, and the soil in which they are growing should be thoroughly saturated with water, so as to induce them to start freely into growth. Cut in the branches of Habrothamnuses. Several of the free-growing Fuchsias are well suited for conservatory-roof decoration or that of pillars, especially when planted out in borders. If trained to the rafters from the middle of April until they are completely denuded of side branches in the end of October or November, for the purpose of resting them and admitting light to the other inmates of the house, they form objects of interest, being richly laden during all that time with both flowers and foliage.

Stoves.—In these vegetation is in a more forward state than in conservatories, consequently a moist atmosphere and steady but gradually increasing temperature are requisite. Ixoras, Dipladenias, Clerodendrons of the Balfourii type, Stephanotises, Bougainvilleas, &c., will now be growing freely; therefore they should have abundance of tepid water at the root, and their shoots should be trained on string along the rafters, or over trellises. Pot plants, as a rule, will have been shifted, but where they have not, that operation should be performed at once. Sometimes the plants do not require repotting, but in that case any of them that are sickly should be shaken out of the pots they now occupy; the old soil should be removed from their roots, and they should then be replaced in pots of the same or perhaps less size, according to circumstances; over-potting is injurious to most plants. Pitcher-plants should be top-dressed or repotted, and by means of additional heat and moisture, and a little shade, started into growth. Cissus discolor, grown in borders or beds, has, in many places, been very beautiful during the winter, and by being pruned now, it will break freely and grow rapidly. Allamandas now starting into growth must be encouraged. Plants of Euphorbia jacquiniæflora grown in borders against back walls form fine specimens and flower abundantly; the flowering points of such plants, if not already done, should now be cut off, and an early growth encouraged; for the sooner growth is produced and matured the better will the plants flower. Poinsettias should be kept quite at rest in an intermediate house, or cool part of the stove, and Aphelandra aurantiaca may be treated in the same way. Sow some seeds of Cyperus alternifolius, and divide the old plants; both the green kind and the variegated variety make fine subjects for table decoration when in a young state. The fine-leaved Begonias may now be shifted and started into growth; they are not quite deciduous, but a long rest in winter greatly invigorates them and improves the succeeding crop of leaves. Caladiums, Gesneras, Achimenes, Curculigos, Gloriosas, herbaceous Begonias, &c., should also all be started into growth, potted as they advance, and be liberally treated.

Bedding Plants.—The stock of these should now be increased in every possible way. A brisk bottom heat, drip-proof pits or frames, clean sharp sand, suitable soil, plenty of space and plants to procure cuttings from, are the requisite conditions for this purpose. Verbenas, Heliotropes, Ageratums, Lobelias, dwarf Tropæolums, Pelargoniums, Chrysanthemum Sensation and the green-leaved summer-flowering kinds, Coleuses, Iresines, Alternantheras, Gazanias, &c., strike by means of cuttings in a few days, and may be potted singly into thumb pots before their roots are more than an inch long. If these pots are plunged in heat, well shaded and kept moist, they never exhibit a check, but grow apace, and in a few days afford young tops for cuttings, and then side shoots for the same purpose; after that, give them another shift into sixty-sized pots. If pots are scarce, all the strongest plants, after being well hardened off, may be planted out next month in frames, kept close for a few days. Coleuses, Alternantheras, and Iresines, being rather tender, should be kept in pots until they are planted out. Sub-tropical plants, such as Solanums, Abutilons, Wigandias, Ferdinandias, &c., should be stripped of what cuttings may be on them every week. Maize, Castor-oil plants, Solanums, &c., should be raised from seed, and the seedlings should not be allowed to get root-bound, otherwise a stunted growth will be the result; they ought, therefore, to be pricked off as they germinate into small pots, and be shifted from them into larger ones. Dahlia roots are now yielding plenty of cuttings, which should be taken off when fit for separation, struck in heat, and treated like other strong-growing half-tender plants. Canna roots may be divided, potted singly, and grown in a stove temperature for a short time. Pot some Gladiolus roots for early flowering.

Indoor Fruit Department.—Pine-apples that have not been already shifted should now be repotted or transplanted into beds. Whether grown in pots or planted out in frames or pits, the heating material should be entirely or partially renewed. If fire heat is used for bottom heat, greater care than would otherwise be necessary must be exercised in watering, as the bottom part of the soil frequently becomes dry when that on the surface is apparently quite moist. Now that the store plants are beginning to push, the atmosphere as well as the soil in which they grow must be kept moist. Ventilate a little during the heat of the day, and cover the frames with mats at night. Fig trees in pots will be swelling their fruits; therefore, some liquid manure given to them two or three times a week will be of great importance to the crop; mulchings of manure answer the same purpose. Those on walls or on front trellises should be started in succession, by closing up the house, syringing twice a day, and stopping the shoots at the third and fourth joints. Pot Vines, if liberally fed, will produce good crops; and, as they are frequently thrown away after bearing, as many bunches may be left on them as they can properly mature and colour. Thin Grapes in general, stop and rub off young shoots, encourage good foliage, and maintain a brisk moist temperature except in late vineries. All old Grapes yet on Vines should now be taken off and preserved. The dampness of the winter has been rather productive of mouldiness amongst those kept in water-bottles. Regulate the growth of Peaches and Nectarines, and disbud and thin the shoots as necessary; thin out, also, all the smallest fruits, and syringe morning and evening. Keep Cherry houses well aired. Introduce successions of Strawberry plants, and place them on top shelves in vineries or Peach houses, or arrange them near the glass in pits or frames, when a little bottom heat given by fermenting material is very beneficial to them. To plants whose fruit is colouring little or no water should be given, as it deteriorates the flavour. Sow the main crop of Melons and Cucumbers, and pot off those already up; such as are large enough may be transplanted permanently. Beds for the reception of the seedlings should be formed completely of fresh soil, for from the plants raised now the greatest amount of fruit is commonly obtained.

NURSERIES.

Indoor Department.—The general spring potting must yet occupy most attention; attend to tropical plants first, the others afterwards. Both foliage and flowering plants, if not previously shortened, should be cut back, and all available shoots so separated should be made into cuttings. The roots of young growing plants must never be allowed to become matted; on the contrary, as soon as shifting is seen to be necessary, it must be done until the plants attain the usual saleable dimensions, when for their final shift good substantial peaty or loamy soil should be employed, and the temperature should be gradually reduced. Roses grafted before Christmas will now have formed shoots a foot or so in length, and some of them may be bearing flower-buds; they should therefore be shifted into 6-inch pots, using a compost of three parts good loam, and one part leaf-mould or rotten manure. These plants should be transferred to an artificially-heated pit, so as to give the younger ones more room in the propagating house. Unfasten the ligatures of grafted Roses, Clematises, Ivies, Daphnes, Conifers, &c., as soon as the grafts are thoroughly united. Continue the grafting of Clematises, using either rooted plants or pieces of the roots; these plants in most instances are readily raised from cuttings, but those of the lanuginosa section seldom root freely; consequently they are almost entirely increased by means of grafting. Repot them when growth has fairly begun. Now is the principal season for grafting Rhododendrons, but success cannot be expected unless the stocks are well rooted and in active growth. Whip or saddle grafting suits them best, and a little clay rubbed over the junction assists the union. Keep the grafted plants in intermediate pits and shade closely. If they are too tall for standing erect they may be laid on their sides. Camellias, Azaleas, and Oranges may yet be grafted under the same conditions as Rhododendrons. Now is the right time to start young plants of these into growth. As they advance prune them back three times during the season, by which means stubby and good flowering plants will be obtained. Any unshapely old plants of these may now be cut down to the bare stumps, for few plants bear pruning better than these, more especially the Orange. Pot off cuttings of Euonymus, Euryas, Conifers, and stove and greenhouse plants that are sufficiently rooted; any found not to be in that condition should be re-inserted and treated as before. Sow seeds of the finer kinds of Conifers, such as Deodars, Cypresses, Araucarias, &c., in frames and pits, and pot singly or prick off in seed-pans or boxes those sown last spring. Two-year-old seedlings may now be transferred from frames or boxes into lines in the open ground in well-sheltered positions.

Messrs. Veitch's Young Gardeners' Institution.—All young gardeners with whom I have conversed are delighted with the account which you have given (see page 196) of this institution; and to Messrs. Veitch our hearty thanks are due for having laid the foundation of a system for improving the condition of young gardeners that I trust may be imitated in all parts of the country. The young men now so well cared for at Chelsea will, I feel sure, not forget in after life the comforts of those under them when they come to be head gardeners, and thus the "bothie," with its long train of discomforts, may be exchanged for a clean and healthy residence.—A Young Foreman.

LAW NOTES.

COUNTY COURT COSTS.

This was a question as to the costs to be allowed to attorneys for conducting business in the county courts. It appeared that a Mr. Barnes sold a quantity of Potatoes in the Leicester market to a person named Vesty, and not being able to obtain payment of the balance due to him in respect of these Potatoes, Mr. Barnes instructed his solicitor to commence an action against Vesty to recover the money owing, which was a little over £20. Accordingly, an action was commenced in the Court of Common Pleas, at the suit of Barnes against Vesty, to recover the sum which Barnes claimed. For certain reasons this action did not proceed after the writ was issued and served on Vesty for several months; and in April, 1872, Vesty brought an action in the county court at Leicester against Barnes, to recover a sum of between £9 and £10, the damages which Vesty alleged he had sustained in consequence of Barnes failing to deliver to him Potatoes which Vesty had contracted to purchase of Barnes. Mr. Barnes instructed his solicitor to defend him in this action, and also to proceed with the action against Vesty in the superior court. It was necessary for Mr. Barnes's interest that the action in the superior court should be remitted to the Leicester county court for trial, and that both actions should be tried at the same court. It should be stated too that the disputes between the parties were of that description that a verdict for one or other of them in the first action which was to be tried was likely to determine the verdict in the other action, Barnes claiming a sum of money, the balance of the purchase money for Potatoes supplied to Vesty—Vesty suing Barnes for not delivering those Potatoes at all, a man named Morgan appearing on Vesty's behalf, and stating that Barnes had sent the Potatoes to him (Morgan), and that he, not knowing what to do with them, had sold them as best he could for Barnes. Both actions were ultimately tried at Leicester, and in both Mr. Barnes was successful. All this litigation could not be conducted without expense, and in due course Mr. Barnes' solicitor sent in his bill, which included charges of preparing for trial in the two actions, and contained a fee of £2 4s. 6d., paid to a barrister-at-law, with the brief in the county court action, and certain payments for telegrams, &c., necessarily incurred in the business. An objection was taken on the part of Barnes that, under the provisions of the 19th and 20th Vict., c. 106. sec. 36, his solicitor was only entitled to recover 15s. for all the trouble involved in getting up the county court case for trial, and a payment out of pocket of £1 3s. 6d. for counsel, although it was not disputed that £2 4s. 6d. had been actually paid out of pocket for counsel, besides telegrams, &c. The language of the section thus relied upon to deprive the solicitor of his costs, except the dry allowance of 15s. to the attorney, and £1 3s. 6d. to the counsel, is as follows:—"Where in any action the debt or damage claimed shall not exceed £20, an attorney shall not be entitled to recover from his client any further costs or charges in the conduct of such suit than those mentioned in the 91st section of the Act of the 9th and 10th years of the reign of her present Majesty, chap. 95, unless upon taxation of costs the registrar be satisfied, by writing under the hand of the client, that he has agreed to pay further costs or charges; and in such case the registrar may allow any costs or charges, not exceeding the amount which may have been so agreed to be paid." The bill of costs was originally submitted to Master Dodgson, of the Court of Common Pleas, for taxation, and he referred the county court costs to the registrar of the county court at Leicester, who held himself bound by the above-quoted section of the Act of Parliament, and refused to allow any more costs to Mr. Barnes' solicitor than the 15s. attorney's fee, and £1 3s. 6d. the counsel's fee, as the solicitor had not, in his view of the case, obtained any agreement in writing from Barnes to pay further costs, although the registrar admitted that the charges were perfectly reasonable, if he had power to allow them. Against this decision of the registrar Mr. Barnes' solicitor appealed. It was contended that the allowance of 15s. for the attorney and £1 3s. 6d. for the counsel only applied to the business actually conducted by the attorney and counsel on appearing in court on the court day, and that for all other charges necessary for properly preparing his client's case for trial the attorney was entitled to recover from his client fair and reasonable remuneration. In support of this view, he relied on the original County Court Act, 9 & 10 Vict. c. 95, s. 91, and the cases *re* Keighley, 19 Law J. Rep. (n.s.) C.P. 166, and *re* Toby, 12 Adolphus and Ellis, 694, which established the principle that an attorney is entitled to recover from his client all reasonable costs in a county court action, both before plaint issued and afterwards in getting up the case for trial, besides 15s. for the attorney and £1 3s. 6d. for counsel, for appearing in court on the court day. Against this application it was contended that the two cases above relied upon were overruled by the Act 19 & 20 Vict. c. 108, s. 36, and were no longer law. The Judge decided that the ruling of the registrar was right, and that an attorney, in any action where less than £20 was in dispute, could only recover 15s. for himself, and £1 3s. 6d. for counsel, no matter what trouble he had taken, or payments he had actually made out of pocket, unless he had protected himself by obtaining from his client his agreement, in writing, to pay further costs or charges, pursuant to 19 & 20 Vict. c. 108, s. 36.

Damaging Trees.—James Annett, 42, labourer, pleaded guilty to feloniously and maliciously breaking thirty-five Apple trees, fifteen Pear trees, and six Plum trees, growing in a garden, the property of Mr. Wm. Maton, at Penton Grafton, on the 7th February last, and was sentenced to four months' hard labour.

Stealing Rose Trees.—Two young Devonshire men were charged the other day with stealing Rose trees from a villa garden at Paignton. One of them was acquitted; but concerning the other it was said the Bench had taken some time to consider their decision in the case. They had no difficulty at all in convicting the defendant of having stolen the Rose trees; the only doubt in the minds of the magistrates was whether they should send him to prison or not; but they were willing to take a more lenient view of the case. They should inflict a penalty of £10, or two months' imprisonment, with hard labour.—Prisoner said he should appeal against the decision. The fine, however, was paid.

COVENT GARDEN MARKET.

March 14th.

Flowers.—Of these there is a good supply, especially of Tulips, Crocuses, and Hyacinths, all of which are remarkably fine. Cyclamens are plentiful and excellent; Chinese Primulas are on the wane; Cinerarias, Spiræas, Heaths, Deutzias, and many other plants are supplied in pots. Cut flowers consist chiefly of Camellias, Lily of the Valley, Gardenias, Roses, Orchids of different sorts, and other things now in season.

Fruit and Vegetables.—Of fruits there is at present but a moderate supply; Shaddocks and Spanish Melons are beginning to disappear, and Bananas are not so good as they will be by-and-bye. Excellent Pine-apples are still imported from St. Michael's. Of last year's Grapes there is still a good supply, consequently prices are lower than usual at this season of the year. New Grapes have also made their appearance; and forced Strawberries are good and plentiful. For good outdoor vegetables there is a brisk demand, and the produce supplied continues to be of excellent quality. Of young Potatoes there is a fair supply from Malta and the West Indies; also frame-grown ones from the Channel Islands. Salading and forced vegetables are of good quality, and the supply about equal to the demand.

Prices of Fruits.—Apples, per half sieve, 3s. to 5s.; Chestnuts, bushel, 12s. to 20s.; Cobs, per lb., 2s. 6d.; Grapes, hothouse, per lb., 6s. to 12s.; Lemons, per 100, 6s. to 10s.; Oranges, per 100, 4s. to 10s.; Pears, kitchen, per doz., 1s. to 3s.; dessert, per doz., 8s. to 12s.; Pine-Apples, per lb., 6s. to 10s.; Strawberries, per oz., 1s. to 2s.; Walnuts, per bushel, 15s. to 30s.; ditto, per 100, 2s. to 2s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 5s. to 10s.; Beans, Kidney, per 100, 2s. to 3s.; Beet, Red, per doz., 1s. to 3s.; Broccoli, per bundle, 9d. to 1s. 6d.; Cabbage, per doz., 1s. to 1s. 6d.; Carrots, per bunch, 6d.; Cauliflower, per doz., 2s. to 4s.; Celery, per bundle, 1 s. 6d. to 2s.; Coleworts, per doz. bunches, 2s. 6d. to 4s.; Cucumbers, each, 1s. 6d. to 3s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 2d.; Lettuces, per doz, 1s. to 2s.; Mushrooms, per pottle, 2s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 3s. to 6s.; pickling, per quart, 6d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 6s. to 10s.; Potatoes, per bushel, 4s. to 7s.; Radishes, per doz. bunches, 1s.; Rhubarb, per bundle, 8d. to 1s. 6d.; Salsafy, do., 1s.; Savoys, per doz., 2s. to 3s.; Scorzonera, per bundle, 1s.; Seakale, per basket, 1s. to 2s.; Shallots, per lb., 3d.; Spinach, per bushel, 3s. 6d. to 5s.; Turnips, per bunch, 3d. to 6d.

The Welsh Leek.—Everybody knows that "Taffy" wears a leek upon St. David's Day, but it is doubtful if any one knows the origin of the custom. One writer thinks it originated in Druidic times, and that the plant was a symbol of Ceudven, the British Ceres. Others maintain that it was the sign under which the Welsh gained a victory over the Saxons, St. David having advised them to assume the badge. Certain it is that the Rose, Shamrock, and Thistle are not more honoured in the countries which have adopted them as emblems than is this odorous potherb in Wales.

Gutta Percha.—The declared value of gutta percha imported last year was £100,681, and in the previous year £196,942.

THE GARDEN.

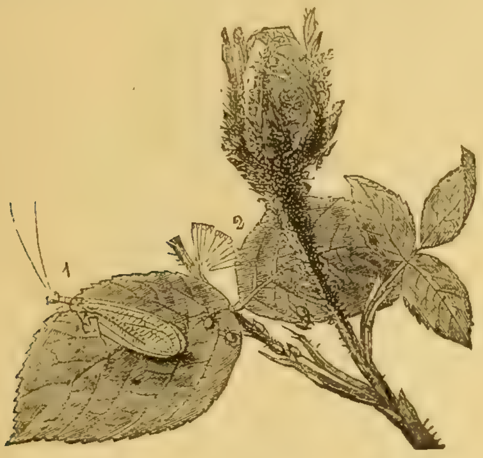
> "This is an art
> Which does mend nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

THE LACE-WING OR GOLDEN-EYE.

(Chrysopa perla.)

Let us hasten to premonish the non-entomological reader that the lace-wing or golden-eye (Chrysopa perla), figured below, comes within the limits of our subject, not as an enemy but as a friend—not as a garden destroyer, but as a destroyer of garden destroyers. It is the great destroyer of green-fly; hence all gardeners will look upon it with respect. Its aspect (that is, the aspect of the perfect insect) is by no means suggestive of destruction; a more delicate, beautiful, and ethereal creature cannot well be imagined. The species are pale greenish, or yellowish, or almost white. The wings are like a film of lace, the body, "as thin of substance as the air," and its eyes large, prominent, and like polished golden globes glittering in the sun.

Although called a fly, it is not truly what is ordinarily meant by that word. It is not a two-winged fly like the house-fly, but belongs to the same order as the dragon-flies, and forms one of the genera constituting the family Hemerobiidæ. There are about a dozen of species of Chrysopa found in Britain, of which the commonest is the one of which we now speak. They are common about hedges, gardens, fields, plantations, &c.; in fact, wherever they prey, the green-fly is to be found. They fly principally at night, and are sluggish and easily caught by day. Although so lovely, they are, in one respect, like a whited sepulchre. They have a bad smell. They are common in June, July, and August, in which months the eggs are deposited in a very remarkable fashion. The reader will see in the woodcut, at No. 2, something like an aigret, a few hairs, surmounted each by a knob standing out all round. These knobs are the eggs, and they stand upon a fine elastic, flexible hair-like stem. It is not difficult to conjecture how they are thus laid. There must be a glutinous liquid near the ovipositor which envelops the egg, and does not immediately part from it when the female places it on the leaf or object on which she is laying. As she withdraws her abdomen from the spot the egg does not readily quit it, but the gluey matter is drawn out like a thread of sealing-wax, and when it parts the egg is left standing on the top of it. The length of this hair of glue varies. It is sometimes as long as an inch; at other times shorter. These eggs are thus very curious looking objects, and we well remember how puzzled we were when we saw them for the first time. It was on a Cherry where several were standing, and like others before us, we were at first disposed to take them for some sort of vegetable production, a fungus or the capsule or seed-vessel of some Moss. It is unnecessary to say that this contrivance is a very effectual protection from enemies, the elasticity and tenuity of the hair or stalk giving no hold to any creature that might attempt to lay hold of it. The eggs are often laid in clusters, as here represented, but as frequently one by one at little distances from each other.



The Lace-wing, or Golden-eye insect.

It is the larvæ that are the real enemies of the green-fly—the perfect insect apparently eating little or nothing. But the larvæ make up for it. They are called by the French "lions des pucerons," or green-fly lions. They vary considerably in colour, being brown or whitish with orange spots, and having sixteen fleshy tubercles down the sides, but they are difficult to detect unless when engaged in the actual occupation of seizing and devouring their prey. They cover themselves with a coat of many colours, composed of portions of the green and delicate lichens which cover old trees or palings, or of the skins of the green-fly that they have sucked dry, so that unless when they are in motion it is not possible either for the prying eye of the entomologist, or the still quicker eye of the titmouse and other small birds to detect them; and thus disguised they lie in wait with patience for their prey. When amongst them, however, their sluggishness vanishes, they seize them with their long and powerful jaws, and will devour the largest of them in half a minute, leaving nothing but the skin. They are exceedingly voracious, and will clear a whole leaf from green-fly in an incredibly short time. After feeding in this way for about a fortnight, they go into the chrysalis state, first spinning a small whitish cocoon, which they attach to the leaves of plants, and about which the pieces of lichen and skins of flies that formed the covering for the larvæ usually stick; but the remarkable thing is, that this silken cocoon is spun, not from the mouth of the insect, but from its tail, as is done by the spider. It would seem that it must be spun from the same reservoir of glutinous matter which supplies the hairs on which the eggs stand, and seems opposed to the view entertained by Curtis and other entomologists that this reservoir is in the ovaries. The cocoons are very small—so small that it is a matter of surprise how the long wings of the perfect insect could ever have been folded up in them—often not bigger than a Barleycorn or small Pea. In this they change to the pupa, and in the summer time they come out in the perfect state in about three weeks; but those that pass into the pupa in autumn, remain in it until spring. A. M.

Crocus Enemies.—Every year at this season my Crocuses are cut off obliquely, just below the corolla, and the colourless tube which descends towards the root is left untouched. On inquiry, I find that my neighbour's Crocuses are served in the same manner, and that this calamity extends as far as Croydon, where the blossoms of hundreds of the common yellow Crocus are thus annually cut off. I do not follow the customary plan of asking for a remedy; that plan I always regard as putting the cart before the horse; but I think I may very properly ask some of your readers who are acute observers what is the mischief-maker, and when I have obtained this information, I will deal with him to the best of my ability.—Edward Newman, *York Grove, Peckham.*

The correspondent of the *Daily News* thus describes his introduction to the Orange-groves of Spain:—"It was still the grey morning twilight, when, having passed through the grim hills above La Lucina, we rattled into the long tunnel that begins soon after that station is passed. When we emerged from the tunnel the sun had risen, and his beams lit up a landscape of amazing beauty. There were no longer barren hills and sandy flats. The broad undulating plain was bright with foliage. On the hill sides were low-roofed, white cottages, shimmering out from the little groves of Orange trees and Cacti that surrounded them. A village, with a tall minaret springing from its centre, nestled compactly under a steep hill, crowned with a castle that belonged to the Templars. The terrain was like a garden, the sprays of flowering shrubs grazing the sides of the railway carriages. From a Mulberry grove miles long we shot suddenly into the gardens of the Hesperides, the Orange forests of the Huerta of Alcira. On every side were laden Orange trees. Beautiful was the sheen of the dark green foliage, but yet more beautiful was the ripe fruit that gleamed in rich golden splendour from under the leaves. Not one or two globes, dangling shamefacedly on the branch of a stumpy plant, as Orange trees are seen in England, but countless clusters of yellow fruit hanging from every spray of trees corpulent in trunk, and wide-spreading in bough."

NOTES OF THE WEEK.

—— The Council of the Royal Horticultural Society have framed bye-laws which, if confirmed at the forthcoming adjourned general meeting on the 26th inst., will enable the present Council to resign in a body, which is what they are anxious to do, in consequence of the adverse vote of the general meeting of the 18th ult.; and the Horticultural Defence Committee recommend the Fellows to adopt the new bye-laws, in order that the existing Council may resign, and that a new one may be formed.

—— A Prussian horticulturist has made some interesting observations which tend to show the usefulness of certain plants as weather guides. Thus he finds that the different varieties of Clover contract their leaves on the approach of rain. When the leaves of Chickweed unfold, and its flowers remain erect till midday, fair weather is at hand; but the closing of the flowers of the Wood Anemone indicates that rain is imminent.

—— Of Picea nobilis, perhaps the finest specimen in Britain is that growing in the grounds at Coul House, Ross-shire, the seat of Sir Robert Mackenzie, Bart. This tree is about forty years old; it is 60 feet in height, and, judging from a photograph of it with which we have been furnished, it has a grand and majestic appearance, standing out, as it does, in bold relief from the commoner objects with which it is surrounded. This fine Conifer attains great perfection in the north of Scotland, especially if planted as this is in a tolerably favourable situation.

—— Messrs. Wolff, of the Steam Pencil Works, 55, Great Queen Street, Lincoln's Inn Fields, have sent us a sample of their indelible garden pencils, of the durability of the markings of which, when subjected to atmospheric influences, we have heard good accounts. They are cheap, furnished with a brass hose to protect the point, and are equally as well suited for the ordinary purposes for which black-lead pencils are used as for writing on garden labels.

—— In the last two months the declared value of Potatoes imported was £544,639, and in the same period of 1872 only £35,963. Last month the value was £262,336, against £19,976 in the month of February, 1872.

—— The Pine woods of Scandinavia are likely to be turned into "broadsheets." A Dr. Silchester has been for some time in Sweden making experiments on the natural sawdust, and has succeeded in producing a pulp, of which excellent paper can be made.

—— An exhibition of spring flowering plants, chiefly Hyacinths, belonging to Messrs. Downie, Laird, and Laing, will take place in the central transept of the Crystal Palace, Sydenham, to-day, and will continue therein for the next fortnight, viz., until the 5th of April. Hyacinths and their culture having charms for everybody, this exhibition cannot fail to be attractive.

—— The Committee of the Stamford Horticultural Society conceived the idea, last season, of holding a children's May-day or garland show, an undertaking which was entered into both by the children and by the promoters with great spirit, something like eighty entries having been made. The prizes ranged from 10s. downwards, and the judging gave great satisfaction. Through the kindness of Messrs. Jeffery & Luke, the exhibition took place in an enclosed field, in which a tent was erected, and in which about 300 of the youngsters were regaled with tea and cake. Exhibitions such as this are surely worthy of encouragement.

—— St. Patrick's Day has brought the usual crop of speculators as to what the true Shamrock is. It is not Trifolium repens, or any of the Trifoliums. Irish pictures and illuminations prove the ancient emblematic Shamrock to have been a plant of quite another order—viz., the Oxalis acetosella, or Wood Sorrel. This probably grew in prodigious quantities before the extensive woods of Ireland were cut down. The Shamrock of old was said to have been used as food; but one can hardly imagine the possibility of human beings feasting upon Trifolium; but the Wood Sorrel is a most refreshing esculent during hot summer days. The Trifoliums (T. minus, T. repens) and Medicago lupulina, being in good leaf at this time of year, and stronger to resist the wear and tear of the button-hole or hot hand than the Oxalis, have doubtless for these reasons become the recognised Shamrocks of modern days.

—— We have received from Mr. Lee, of Clevedon, a few flowers of his new Violet, "Victoria Regina," a kind well worth attention, on account of its size and scent, which is very powerful, and which is retained long after the flowers have been gathered. Although a seedling from the Czar, the leaves are like those of Devoniensis, with which it is, no doubt, crossed, as beds of the two sorts grow side by side. Large and fine as Victoria Regina is, Mr. Lee is of opinion that it may possibly be the forerunner of a new race of Violets; for out of about thirty seedlings from it there are no two alike. They include also several shades of colour, some having conspicuous white eyes, and being tolerably round in shape. We may therefore eventually hope to get sweet Violets with forms little inferior to those of Heartsease. The blooms are borne well up above the foliage, a point of considerable importance in regard to Violets, the flowers of which are so much wanted in a cut state for indoor decoration.

—— The ornamental waters of the Bois de Boulogne are being utilised for salmon breeding.

—— The managers of the Vienna Fruit Market have decided to hold an International Seed Fair in August, during the Exhibition, on the model of that held at Leipzic.

—— The present year's schedule of the grand Yorkshire gala is before us. The floral and horticultural fête is to take place on June 18 to 20, under the presidency of the Mayor of York (Mr. Alderman Steward), who is also chairman of the committee. We note among the prizes offered one of £25, for a group of 12 stove and greenhouse plants in bloom, and 8 fine foliaged or variegated plants; and Mr. Williams, of Holloway, adds to this a silver cup, value £10, in commemoration of the chairman being appointed Mayor of York. In a class for 6 new and rare plants in or out of bloom, there is a proviso that such of them as are not in flower at the time of the exhibition, and have previously flowered, are to be accompanied by a coloured drawing.

—— The mode in which the fertilisation of Grasses, and especially of Cereals, is effected—a question of no small importance from an agricultural point of view—has recently been the subject of a series of observations by Delpino in Italy, and Hildebrand in Germany; and the latter has published the result of his investigations in the "Monatsberichte" of the Berlin Academy. Both these acute observers are at issue with previous writers, who maintained that the flowers of Cereals, and especially of Wheat, were self-fertilised in the unopened flowers, and consequently that the process could not be influenced by the wind. Hilbebrand asserts, on the other hand, that impregnation takes place while the flower is open, and while the stigma is in a condition for the access of foreign pollen, that is, from other flowers. The opening of the flower of Wheat, however, is completed in such a very short space of time that in a Wheat-field there is probably never more than one in 400 of the flowers open at the same time. The contrivances by which in this case, as well as in other Grasses, cross-fertilisation is at least rendered possible, are described in detail in the paper. In Barley, on the other hand, the majority of the flowers never open, and self-fertilisation is the only condition possible. Delpino states, however, that there are in an ear of Barley a very small number of flowers, differently constructed from the rest, in which cross-fertilisation is possible. In the Oat the process is stated to vary according to the weather; in fine warm weather the flowers open freely, and cross-fertilisation is favoured; in cold wet weather they remain closed, and self-fertilisation is inevitable. In Rye, fertilisation from the pollen of other flowers is provided for. The agent in the dissemination of the pollen is scarcely ever insects, almost invariably the wind, to which end both stigma and pollen-grains are specially adapted.—*Nature.*

THE WILLOWS ON HAMPSTEAD HEATH.

TO THE EDITOR OF THE "TIMES."

Sir,—"You English have no taste," so said a foreigner to a countryman of ours as they gazed upon our branchless trunks this morning. The remark was made with special reference to the Board of Works, and if any doubt the justice of it, let them come and see us shorn by the monsters of Heath rule of all our beauty. Did they commit the act to provide themselves with fuel during the remainder of the coal famine? Or did they intend it to be an act of kindness, seeing we had just become tall enough to behold the hideous spectacle of our neighbours—the Oaks, Elms, and Firs, at the other side of the road? Poor fellows, they offer a painful sight—their ankles cased in armour and their naked toes left to be trodden on! There was a time when they were regarded as beautiful parts of a beautiful scene—admired by Turner, Constable, and Callcott, each and all of whom delighted to perpetuate them on canvas. Now they appear but little better than the trees of a German box of toys fixed upon stands to secure an upright position. Really, Sir, it is too bad; and we feel the more indignant when we remember the ratepayers are taxed to enable the Board of Works to convert beauty into deformity.

We are, Sir, your obedient servants,

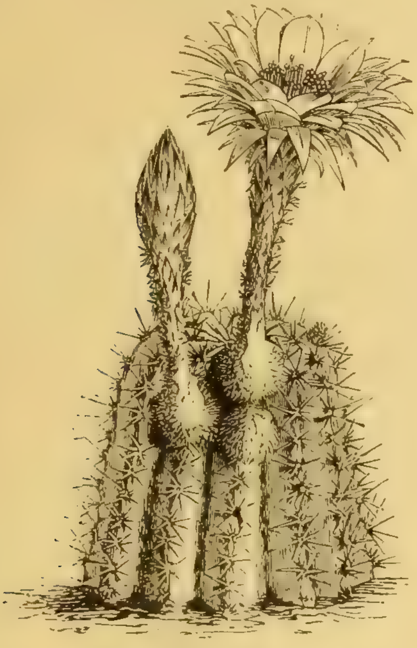
March 14. The Willows on Hampstead Heath.

The Small Birds Protection Act.—This has now come into operation, and hereafter any one lurking behind the garden fence with a stuffed chaffinch, a call-pipe, and a clap-net, may be at once taken before a magistrate and fined 5s., with an additional sum for each miserable bird captive in his possession.

THE INDOOR GARDEN.

ECHINOPSIS VALIDA.

This is one of the finest and largest of the genus to which it belongs; its flowers, which are pale rose, are produced in great profusion, so much so that last season on one plant I had two crops of them, each numbering from twenty to thirty blossoms, and even now it is well furnished with flower buds. It grows from 6 to 8 feet in height and 2 feet in circumference, and it begins to flower when only 6 inches high. The spines are nearly black, from 1 to 1½ inch long, and exceedingly strong. Its native habitat is not at present known; but it has been in collections for some time. Like all the species of this genus, it is a free grower, but throws out no offsets. From what I have seen of it, I should say that it wants but very little heat. J. Croucher.



Echinops valida.

FORCING FLOWERS.

(May or Hawthorn).

This is one of the most delightful occupations belonging to horticulture. Roses in January, Hawthorn blossoms, the very breath of spring in February and March, what can be more charming? It is not only that the flowers are so sweet, tender, and beautiful, but the associations that cluster around them, like the hum of bees, call forth pleasurable recollections. The flowers of forced May are fresher, brighter, larger, and the leaves likewise, than those on plants that are allowed to come into bloom later in the season. Leaves in out-of-door May are somewhat overlooked. Not one in a thousand possibly when admiring thorns smothered in bloom has ever noted the marvellous beauty of form and the intense greenness of their foliage. In forced May, however, the exquisite beauty of the leaves is brought out in bold relief. The forcing enlarges them, and their shape and colour are distinct from those of most of the plants with which they are associated. Paul's scarlet Thorn, too, one of the best for forcing, has finer leaves than most of the other varieties. Bunches of the bloom of this, cushioned in its own foliage, set round white Camellias in a bouquet in February or March are rapturously beautiful, as are also small vases, baskets, &c., dressed with the flowers and leaves of this May.

Thorns for forcing should be potted early in November, and if grown in pots for one year, the pots should be plunged to the rims in a warm, sunny piece of ground. The pots will thus become full of roots, and the check which these will receive from their circumscribed area will retard growth, hasten the maturation of the wood, and thus fully furnish it with blossom buds before the end of the growing season. Plants thus prepared may be put into heat by the beginning of October, and be made to adorn the Christmas-tide festival with a novel and most appropriate type of new-born beauty. If forced the same season in which they are potted, there will be fewer flowers, and the process should be much slower. Plants properly prepared for flowering in February, March, or April improve year by year, and get into the habit of flowering early. With top-dressing, summer-plunging, and mulching, they will also bloom, for many years in succession, in the same pots, say, 12-inch ones. In fact, nothing can be easier managed than the forcing of May in pots. It will grow in any soil, thrive under almost any treatment—unless, indeed, the early plants are thrust out in the cold as soon as their flowers fade, to have their tender leaves blackened by April or May frosts; that will delay a year's blossom, perhaps cripple the plants for life. As to sorts, all are beautiful. I like to have some of the common single white Hawthorn, also the single pink or red; and, of course, all the varieties of the double pink, white, red, and scarlet, force well, the single white being, perhaps, the most impatient of any excess of heat. With respect to form, I am fond of small standards or pyramids. They are more convenient and perhaps more artistic than those of other shapes; they harmonise, too, better perhaps with other pot plants, and yield a maximum of flowers in a less area than plants of other forms would do. Any shape, however, will do, and any size, though I find pyramids from 5 to 6 feet in height handy sizes. A temperature of from 45° to 55°, with frequent syringings, suits May of all kinds well. An early Vinery or Peach house "at work" is just the place for them until they come into blossom. Then, oh! for the eye of a painter, and the combined taste of all our best decorators to dispose of May plants, wreathed with beauty's choicest garlands, in the best places in rooms or conservatories for the richest effects. All of us, doubtless, often fail in these finishing touches of art. We have, however, this consolation, that May plants look well anywhere, anyhow, and that often by haphazard disposal of them we reach a grace and beauty of setting beyond what could be acquired by studied art.

When the flowers fade—which they are long in doing—and the tender green leaves are safe, plunge the plants for the summer, as I have said, in the eye of the sun, and see that they never flag from want of water, and that no insects feast on their leaves; and next autumn you will find them fuller of life and thicker set with flowers than ever, and so on year after year. D. T. Fish.

EUPHORBIA JACQUINIÆFLORA.

This useful winter-flowering plant is seldom seen now in such good condition as it used to be some thirty years ago. To see plants of it then from 4 to 6 feet in height, with from twelve to twenty leading branches, each starting from the base, and a wreath of glowing orange-scarlet flowers, was by no means an unusual sight; now from six to ten spindling plants crammed into a 6-inch pot, each from 18 inches to 2 feet high, are the acme of cultivation. Why this should be I cannot tell, for plants in general are as well grown now as then. For winter decoration this plant is second to none. Its flowers are exquisite in form and colour, and they are persistent. The leaves are lance-like, of delicate (I might almost say transparent) green. For wreaths for the hair nothing can surpass the blooms of this plant, though the Covent Garden bouquetists are not insensible to their value in the art and mystery of their fabrications.

This Euphorbia is a stove-plant—that is, in the winter or blooming season it requires something warmer than a greenhouse temperature; and, indeed, to grow it properly, the atmospheric heat should range from 60° to 75°, the former being that of the night, the latter that of the day with sunshine. It is readily propagated by means of cuttings of the ripened wood, which may be put in as soon as the plant has done blooming, say in February or March. The cuttings should be from 2 to 4 inches long, according to the strength of the wood, and the more ripened the wood is the less will be the chance of the cuttings damping off. As a check upon damping, it will be best to allow the cuttings to dry for two or three hours before they are put in, because when fresh they exude a thick milky juice which, if allowed to accumulate around the base of the cutting, causes it sometimes to damp off. The cuttings being prepared, take some 4-inch pots and, draining them thoroughly, fill them to the brim with a compost of peat and turfy loam in equal quantities, from which the fine particles have been sifted, and to which may be added a fourth of pea-sized charcoal or potsherds, and the same quantity of gritty sand. Mix these intimately together, fill the pots quite solid, and then put in the cuttings, leaving them for a few days without water. The cutting pots should be plunged in a bottom heat of 80°, or nearly so, and in six weeks they will be well rooted and fit to pot off. Those who are desirous of having large specimens quickly, and who do not wish to exhibit them, may elect to grow three or four plants in each pot, while others may not exceed the legitimate number of one plant. The soil used should be two parts turfy, sandy loam, with the fine soil taken out of it, one part turfy peat, and one part flaky leaf-mould, to which may be added sand and charcoal; and, as the plants get larger, a dash of bone-dust, say a handful or half a pint, to each peck of the preceding compost may be added, taking care to thoroughly incorporate it. After the plants are potted off, place them in a close, moist atmosphere until they are established in the fresh compost, and then inure them to the free air of the house, always remembering that it must be a hothouse with a brisk moist temperature. So managed, if the cuttings were strong, the plants will start away with vigour, and produce three breaks each, or perhaps more. Presuming that you have strong plants established in 3-inch pots, let them grow on until the shoots are from 6 to 9 inches long; let the plants dry for a day or two, and then cut each shoot to within four, or, at the most, six buds of the base. From each of these side branches three or more shoots should be produced, and these, nicely trained out, will give a foundation, which, in the second season, should form a fine specimen. It will not be advisable to stop the plant a second time, but the shoots may be allowed to grow to their full length, which, according to the strength of the plant, may be 2 or 3 feet. Of course the plant will require to be shifted into a 6 or 8-inch pot, using the compost already described. For perfect growth a brisk, moist heat must be maintained, and after the pots are full of roots, weak liquid manure may be given once or twice a week with advantage. This will bring the plants to the end of the first season, and as soon as they have done blooming lessen the supply of water so as to promote the ripening of the wood; but do not, as some do, allow the roots to become quite dry; nor put the plants in a low temperature, which is an equally bad practice.

In the second season you will have plants which, with each branch of the previous year cut back to within three or four eyes of the base, will give you a forest of young shoots. The cutting down should take place while the soil is comparatively dry; and to equalise the flow of the sap, so as to cause the buds to break regularly, it is not a bad plan to lay the pot upon its side, turning it twice or thrice a week. In that way the shoots will come away with more uniform strength, and hence will form a better plant. Give water cautiously at the root, but you may syringe the plant almost daily with advantage. When the young shoots are an inch or so long is the right time to re-pot the plant. In doing this turn it carefully out, and without injuring the roots remove as much of the old soil as possible, and then re-pot into a pot a size or two smaller. After this the plant should be plunged in a bottom heat of 80°, and be exposed to a moist growing temperature of from 70° to 80°. Perhaps it may require a second and third shift during the season, but, as a rule, over-potting is worse than under-potting, and hence an 11 or 12-inch pot should be quite large enough for the second season's growth. Whether you stop a second time or not must depend upon the kind of plant you want. If a tall, strong plant be desired, then select a dozen or score of the strongest shoots and allow them to grow to their full length; but if you want a shorter, bushy plant, then, when the first shoots are a foot long, cut each back to four or six eyes, and treat them as already directed. To secure an equal growth at all stages after stopping, it may be necessary to depress the strong shoots by tying or pegging them down, so as to give the weaker ones a fair chance to start properly; in that manner you may get them all up with tolerably equal strength, so that each will be a wreath of bloom nearly the whole length. To prolong the blooming season, the most suitable temperature will be from 55° to 70°, and in that plants will bloom from November until March.

Those who require this Euphorbia in quantity for cutting, will find it advantageous to plant a few plants out, and either train them to a pillar or to a wall where the necessary temperature can be maintained. Thus managed, with the young wood annually spurred close in, and the plant liberally treated as to soil, manure, and temperature, the flowers may, after the plants become established, be cut in quantity, and for bouquet and vase work nothing can be more beautiful. The chief enemies of the plant are thrips, red spider, and mealy bug, all of which must be kept in check and destroyed by the usual remedies.—A.

CANARINA CAMPANULA.

This fine old-fashioned plant, which displays its beauty throughout the whole of the winter months, is one which, unfortunately, is too seldom seen in our plant-houses of the present day. It is a native of the Canary Islands, and even upwards of two centuries ago it was held in much esteem by cultivators. It has a tuberous root; the stems are herbaceous, the leaves opposite, and sometimes, though rarely, verticillate; their upper surface is shining dark green, their under side being of a paler hue. The flowers are large, campanulate, and pendulous; orange-red in colour, prettily veined, and very beautiful. I have a plant of it between 2 and 3 feet high, just beginning to open its blooms, which it will continue to do up to March or April. The management which this plant requires is extremely simple; after it has flowered the stems die down, and whilst they are decaying, water must be withheld by degrees, until very little indeed need be given, but I do not keep it quite dry at any time. About the beginning of August it should be repotted in a well-drained pot, using for soil good sandy loam and peat, to which may be added with great advantage a little charcoal and broken lime rubbish. After potting place it in a little heat, from which it should, however, be removed when about a foot high; transfer it then to the greenhouse, to the temperature of which it should be gradually inured, and place it in a dry sunny spot if possible. When the dull days of autumn come on, care must be taken that it does not suffer from damp, for when that happens, the young and growing shoots which produce the flowers become rotten; a little attention will, however, prevent this mishap, and it will then be found to be one of the best of winter blooming plants. G.

Mantisia saltatoria.—This singular Gingerwort was introduced to this country in 1808, and flowered about two years afterwards, for the first time in Europe. I well remember with what delight I beheld its flowers unfold in the spring of 1847, which was the first time I had seen it. This plant is of a dwarf stature, seldom exceeding a foot in height. The roots are thick and fleshy, and from them spring the young plants, which bear broad, lanceolate leaves, that taper to a long, slender point, with sheathing bases, both sides being pale green. The flower-spike, which is branching, is thrown up separately from the leaves, and the base of each division of the scape is furnished with a large purplish, mauve-coloured bract. The flowers themselves are yellow and purplish-mauve, and their peculiar structure has led to their being called "Mantis Flowers" and "Dancing Girls." Their resemblance to the insect Mantis in shape is sufficiently apparent; but I confess that it requires a considerable stretch of the imagination to discover in them any resemblance to "Dancing Girls." The filament and anther, with its wing-like margins, are, however, said to represent the head and neck of a girl, the long inner segments of the corolla the arms, and the labellum or lip the dress; but be that as it may, the flowers are both interesting and showy. As regards cultivation little difficulty need be experienced. It should be potted in equal parts of rich loam and peat, with the addition of a little sand to keep the mixture open and porous; the pots should be well drained, for although the plant delights in an abundant supply of water during summer, it cannot be subjected to immersion in stagnant water with impunity; the shoots die down in winter, when water should be withheld, but not entirely, that being the rock upon which so many founder in the cultivation of this plant. Keep it slightly moist during winter, and when it begins to throw up its shoots and flowers, return to the summer treatment and all will be well, whilst at no time will it require much pot room. It is a native of the East Indies, and enjoys the temperature of an ordinary stove.—R.

PHAJUS GRANDIFOLIUS.

This is an old inhabitant of our gardens, having been introduced from China in 1772. It is a terrestrial Orchid of the easiest possible culture, and flowers most profusely about this time of the year. When well grown, it soon develops itself, and forms fine specimens, with from twenty to thirty spikes of effective white, brown, and purple flowers. It is a gross feeder, and does well in a compost of fibrous loam, well decomposed hot-bed manure or leaf-mould, and coarse sand. Drain the pot effectually, and then give an abundant supply of water at the roots when the plants are making their growth. Like many more terrestrial Orchids, it is found growing in its native country by the margins of streams. A little weak liquid manure may be given with advantage when it is in full growth, and this also greatly assists such plants of it as are pot-bound. Good specimens are very useful at this season for conservatory decoration. F. W. B.

Phajus grandifolius.

Phalænopsis Luddemanniana.—This handsome Orchid, which has now been for some time in cultivation, is finely figured in a late number of the *Revue Horticole*. It is a native of the Philippine Islands, where this species abounds, and has been named in honour of M. Luddemann, a distinguished Parisian Orchid grower. The pseudo-bulbs in this species are merely rudimentary, and bear one or two thick leaves of a fine glistening green colour. The flowers are numerous and form a handsome and somewhat compact spike. They have five oval pointed divisions, which are nearly of the same size and shape, of a rosy violet at the base, and bearing, from the base to the apex, broad transverse bands of a vinous red or maroon colour, the whole lustrous as if varnished. The lip is also of a rosy violet colour. A variety (P. L. ochracea) differs from the type in having yellowish or pale rosy flowers, in which the transverse bands are of an ochry or chestnut colour. P. Luddemanniana is grown in baskets suspended in a moist stove. If they are hung so that the roots, which are all aërial, may reach some soil or decomposed wood, they soon begin to swell, assume large proportions, and communicate a great increase of vigour to the plant. It is multiplied by means of the shoots, which are produced freely.

Cinerarias with "Blind" Trusses.—Can you tell me why my Cinerarias (which appear very healthy and dwarf in growth), produce "blind" trusses? They are in 6-inch pots, and have never been attacked by green-fly or anything else. They are not, however, all "blind." Some are showing beautiful blooms, mixed with the "blind" trusses. They have been watered twice a week with weak manure, made from fowl's dung, and all have had the same treatment.—Highfield. [Over-feeding or undue excitement in the way of temperature is probably, in your case, the cause of failure.]

THE FLOWER GARDEN.

IVIES.

For many years the Ivy seems to have been neglected as a decorative plant, partly because the normal form is such a common country object that few woodland walks can be traversed in which some fine specimen may not be met with. But, although I do not despise the common forms found everywhere in a wild state, I wish to draw the attention of the readers of The Garden more especially towards the many pretty varieties which may now be purchased for a trifling sum from almost any nurseryman. Passing through a small village on the banks of the Mersey (Ince, Cheshire) recently, I was fortunate enough to observe the finest specimen of Hedera argentea minor (covering the walls of an old-fashioned farmhouse) that I have ever seen. It was not a small, dwarfish, half-dying and withered example; but had a main stem four inches in diameter, and branches and leaves spreading over a surface of not less than twenty square feet. Moreover, it was a genuine variety; and although I did not examine every leaf minutely, yet I do not think I exaggerate when I say I believe every leaf was uniform in colouring. I lay great stress upon this uniformity in colouring, as constituting a good and well-marked variety. On this account many so-called varieties are worthless, and cause much disappointment to the amateur. A friend of mine some time since wished to secure a good selection of the golden and silver-variegated Ivies. He had carefully trained a few specimens of the Irish Ivy (Hedera canariensis) in various positions about his house and garden, then he thought he would purchase a few varieties to contrast with these. After searching over many of the noted catalogues, he at length decided both upon the names and quantity. At first they were but small pot-plants—therefore it could not be expected that they would show many characteristic marks; but judge of his disappointment, after three or four years' cultivation: one specimen, rejoicing in as many names as a Spanish grandee—viz., Hedera canariensis argentea major palmata-marginata—merely had some of the leaves slightly marked with whitish spots, somewhat as if white paint had been sprinkled over them, whilst most of the leaves were quite plain, or just tinged with golden blotches. The whole of his expensive specimens, excepting two or three, turned out to be the genuine Hedera Helix of English botany.

It is only when growing in a perfectly natural state that the Ivy or its varieties can be really called handsome; when it is clipped and trimmed Dutch fashion, it loses all its effect. I once saw what may with truth be called a famous Ivy. A large Elm tree had been struck by lightning in an extensive park, which necessitated its owner to saw off the head, or upper branches, about 15 feet above the roots. Soon afterwards a small plant of the Ivy began slowly to creep up the gnarled old trunk, until, after the lapse of a few years, it had clothed it with a rich drapery, and hung from the summit in rich festoons. On one side, where a huge wart-like excrescence bulged out, a fine tuft of the common Polypody (Polypodium vulgare) had found a congenial home; and thus, betwixt the two evergreens, an unsightly trunk was transformed into a rich embellishment. The proprietor of the park thought more, perhaps, of this naturally-formed adornment than he did of most of the fine old trees around his hospitable mansion. There are probably only three really distinct species of the Ivy in cultivation—namely, the Irish (H. canariensis), Asiatic (H. colchica), and the wild or English Ivy (H. Helix), and from these all our pretty varieties have descended. The most hardy, vigorous, and free-growing species is without doubt H. canariensis. On a future occasion I intend to notice some of the most characteristic and pretty varieties of Ivies in cultivation, and the best modes for growing them effectively. James F. Robinson.

Summer Border Plants.—I have a border on which I wish to substitute annuals for ordinary bedding plants. How am I to proceed? Will they look well ribbon fashion? H. M.—[The commoner kinds of annuals would not be suitable for your purpose, as their duration is short; but by using such things as Mignonette, Stocks, Asters, Saponaria calabrica, Phlox Drummondii, Nemophilas, and some other very choice annuals, you might have a continuous supply of flowers throughout the summer. A few herbaceous plants, such as Viola cornuta, blue and yellow Cliveden Pansies, Campanula carpatica, might also be added. These would, however, hardly be suitable for a ribbon border, but by making a panelled border you could have a variety of plants and abundance of blooms. The front line might consist of blue Lobelia, and the back line some sort of Pelargonium. Between these two lines mark off the ground into a panelled or chain form, each link of which should be planted with one kind of plant only, but a distinct specimen may form a centre piece to the link, and a doubly planted line may separate the one link from the other. The links may be circular, oval, square, rhomboid, or of any other conceivable form. The annuals just named do best when raised in heat, but the hardier ones will do very well raised on the open border, afterwards to be transplanted where they are to bloom. Mignonette, however, should be sown where it is to remain. Should some hardy Sempervivums be obtained they would form nice edgings, and are easily increased by means of seeds, leaves or offsets. S. montanum, californicum, and tectorum are amongst the best, and make good permanent and neat edgings throughout the year. Calceolarias in some places do badly, even under the best of treatment. For these you might substitute Tagetes pumila, yellow Pansies, and Gazania splendens, and where foliage is as important as flowers, yellow-leaved Pelargoniums answer the purpose very well.]

A Flower Farm.—That floriculture is becoming rapidly popularised in the new world will be sufficiently evident from the following account of the flower farm of Mr. Allen, of Long Island, sent us by a correspondent. There were eighteen acres of Gladioli in blossom, and perhaps your readers can imagine the mass of gorgeous colour which three hundred named varieties, planted to this extent, would make. Then, in addition to the three hundred named varieties, there was a bed of 3,500 seedling Gladioli—among them as fine specimens as can be found among the three hundred named varieties; and several that will become distinguished for their unique beauty. Then imagine ten acres of Lilies, a large proportion of which were in bloom. These embrace also about 15,000 seedlings. Here was to be seen the only Leitchlinii in bloom to be found in the country, it was said. Fifteen or twenty acres are cultivated in Tuberoses. Mr. Henderson's new dwarf variety is here—about half as tall in growth as the old sort.

Rose Culture on the Pegging-down System.—This system is easily understood. The shoots made last summer are pegged down in spring near the surface of the earth, while those that flowered last summer are cut clean away. In like manner, the pegged-down shoots that will flower throughout the coming season will be cut away at next pruning time, and the young shoots made this year from the central parts of the plant will be pegged down in their turn. By this system flowers and shoots seem to spring from the leaf-covered earth, and the pruning is simplified; we have merely to cut away the old shoots that flowered in the past year and peg down the young ones, shortening and thinning these last as each variety may require. This gives us a totally new set of fresh vigorous flowering shoots every year. By the old system we had no such advantage, and it was quite common to so badly prune Roses, by hacking away at old and new wood alike, that they hardly paid for root room.—V. E. R.

The Blue African Lily (Agapanthus umbellatus).—This is one of the most beautiful and useful of the Lily tribe, and one which, though commonly considered to be a greenhouse plant, will succeed well in a south aspect in the open air. There is a white and also a variegated variety of it too, both of which are well worth attention. I, however, find the blue kind the most useful, as it remains so long in bloom, especially when set in a partially shaded situation, or just screened from the parching rays of a bright sun. Like the Scarborough Lily (Vallota purpurea), it is very suitable for placing in a porch or balcony, as well as for conservatory decoration. All the varieties of this Lily flower when well grown in a mixture of equal parts leaf-mould and rich fibrous loam, to which may be added one part lime-rubbish mixed equally with sand. They are easily multiplied by division of the roots, after which they require to be set in a shady situation until they make fresh roots and growth. When established they will bear more exposure to light. I have grown the ordinary blue Agapanthus for fourteen years, and have found it to be a most valuable autumnal flowering plant both in and out of doors. —J. Graham, *Woodcliffe Gardens, Rawdon, near Leeds.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Early White Arabis.—In a garden at Feltham might have been seen in full bloom on the 27th of February, a number of plants of Arabis albida, whilst a larger number of other plants of the same species of Arabis, growing in the same place, had scarcely developed flower-buds, and were at least four weeks later than the plants to which I allude. I conclude, therefore, that the latter must be seedlings from A. albida, but much more precocious. Certainly to those who love to see border flowers in bloom as early in the year as possible, this new kind will prove most acceptable. A. D.

New Pink Variegated Daisy.—The double-crimson form of the Golden Blotched Daisy is one of the most charming and effective of all spring garden decorative plants; and it is most remarkable that ere this growers for market have not yet offered it to the public in quantities. In the seed grounds of Mr. R. Dean, at Bedfont, may now be seen a true pink form of this plant, a sport from the crimson-flowered kind, and one which maintains its character, and makes a pleasing acquisition. There is also a white-flowered form sometimes to be met with, but with golden foliage the colour is not pleasing.—Alpha.

THE GARDEN IN THE HOUSE.

PRESERVED ODOURS.

Perfumes have been divided into orders—one list, drawn up by Linnæus, making nine classes, beginning with the aromatic, typified by Pinks, Laurels, and all the Labiatæ, and passing through the "sweet"—such as the Rose, Lily, Jasmine, Crocus, &c.; the ambrosial, such as amber, musk, and several exotic Geraniums; the alliaceous, of which the chief type is garlic, assafœtida, and several resinous gums; the fetid, like the goat; the repulsive, like the French Marigold, and several of the Solanaceæ; and finally the nauseous, like the flowers of the Veratrum, the Stapelia variegata, &c. The other and newer list has eighteen distinctive odours of perfume, beginning with the Rose as the type, which includes also the Geranium and the Eglantine; the Jasmine, including the Lily of the Valley and the Ihlang-ihlang; and going on through the Orange, Tuberose, Violet, Vanilla (balsamic), Cinnamon, &c., to the fruity, as Pear, Apple, Quince, and Pine-apple. The first step in the art of perfumery was simply to burn such sweet-smelling woods and gums as gave off a perfumed vapour, by which the gods were to be propitiated, inasmuch as by this they were fed. The last has been the thousand and one pretty applications put out by the leading perfumers of France and England; the French being in our day what the Athenians were in olden times, the great masters of the art, with both more taste as well as more skill than any of their rivals. All that they make in the way of perfumery proper, or of any description of scented toilette necessaries, is of a better kind than anyone else can accomplish. Their soap is superior to ours; as much superior as the German is inferior.

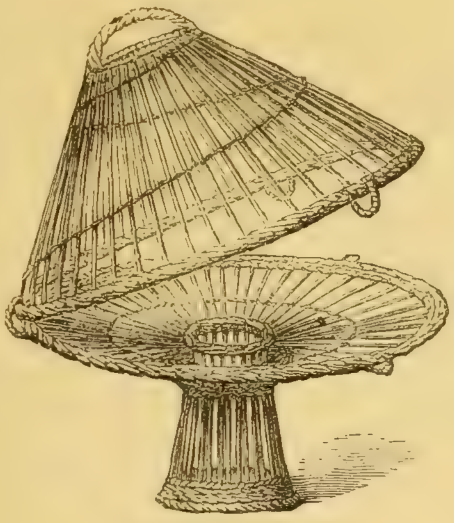
But it is in perfumery proper, that which fills our scent bottles and scents our handkerchiefs, that Frenchmen, of all flower distillers, have made the greatest improvements. Thirty years ago there were neither so many extracts, nor so many flowers from which to extract, as now. Eau de Cologne from the city of a hundred odours, and Lavender water from the fields about London, formed the staple of the liquid scents in use. Rondeletia, sweet, cloying, sickly; millefleurs, more delicate; Verbena, coarse and overpowering; essence of bouquet, simply perfection, to this day unsurpassed—these were the principal extracts in the days when some of us were young; but since then their name has become legion, and a new perfume is now as much *de rigueur* for the season as a new colour or a fresh costume. The range of materials has been increased by the introduction of new flowers from abroad. A few years ago Ihlang-ihlang, Frangipani, Vitivert, to mention no others, were as little known as the minor planets to the Greeks, or the spectroscope to the Chaldeans. With the marvellous facilities of distillation and the preservative properties of glycerine, both of present time and use, and with the cultivation of so many new exotics, a far larger field is open to the perfumer; and he has made the best of it. Yet there are certain things which baffle him. Not only that question of what is the real essence of odour, which we spoke of before, but also the power of fixing it in certain cases eludes the skill of the deftest distiller. The Heliotrope is our best example. No process known can imprison the fugitive scent of this delightful flower; and the only approach to it that can be had is by a combination of Heliotrope and Bitter Almond, which imitates it *tant bien que mal*. In spite of all that art and science can do, the only solid base of floral extracts remains with six flowers—Orange flowers, Roses, Jasmine, Violets, Acacia, Tuberose. For England add Lavender. Of course there are the perfumed woods, such as sandal wood; the animal odours of civet and musk; the aromatic odours of Cloves, Cinnamon, and the Labiatæ; but in spite of certain extracts got from Geraniums, Jonquils, Mignonette, &c., the real mothers of our scent-bottles are the six we have detailed above.—*Examiner.*

BOUQUET MAKING.

Your correspondent "P. A.," when writing on cut flowers (see page 38), says the bouquet maker first lays the foundation with any small-leaved sprays by tying them together, and then taking a Rose or Camellia for a centre, proceeds to arrange the other flowers around it. May I ask your correspondent to be a little more explicit as regards the so-called foundation. I cannot understand how to put a large flower in the centre, that is, on the "foundation." Does your correspondent mean the fan-shaped bouquet? If so, I can understand him, as it is the old and still prevailing system in country markets to have a flat framework or foundation at the back; but I believe I am right in thinking that this old one-sided bouquet of the country cottager or industrious farmer's wife is not the bouquet of a Covent Garden Market artist and expert; those, if I am rightly informed, are made round and rather flat. I never saw one of them;

still I have made many bouquets that have been thought worthy of a better fate than to be thrown under the table even at Covent Garden; but if I can improve their form by a foundation of sprays, I shall be very pleased. An expert maker, it is said, will edge with Mignonette or Sweet Briar, or Lily of the Valley. This, again, is new to me. Edge with Mignonette, that is so brittle? Here I must allow the Covent Garden bouquet maker to be my superior. I always place Mignonette, Lily of the Valley, and the like more in between the other flowers, so that they may sit above the surface of the bouquet; by so doing they are not liable to be broken or lost. Sweet Briar undoubtedly is well suited for edging as well as for intermixing with the flowers. Such is my way, but I wish to learn. I can meet your correspondent on better terms when he says the expert artist will most likely throw into a vase, as a foundation, a handful of Sweet Briar, &c.; this is what I always do in the case of trumpet-shaped vases; indeed, it is impossible to keep short stemmed flowers up without such, especially when nothing but water is employed, but I always like sand, because in that case the flowers stay better in their places, and few of them are needed to furnish a vase. Ladies as a rule do not place a foundation or frame-work first in the vases, but put flowers first, and then sprays after. Hence the most charming and effective of the flowers often get lost in the bottom of the vase. I quite agree with your correspondent in reference to arrangement, but I cannot understand what is meant by a foundation, and common Box is not to my taste a suitable companion for a Camellia or a forced Rose.—J. T. Maesgwynne.

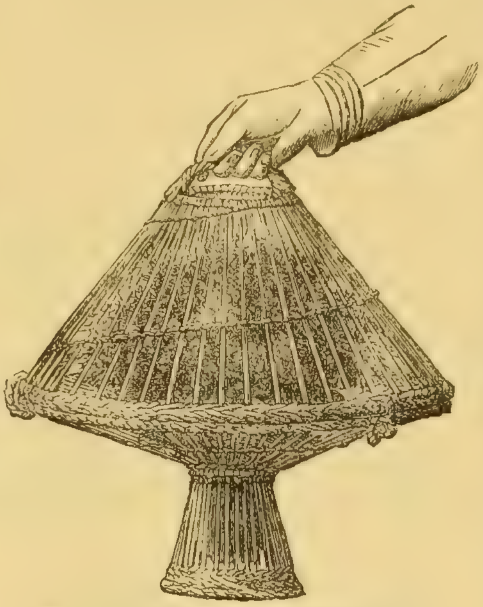
[The foundation of a pyramidal hand bouquet should be formed with long wet bunch moss standing erect. It should be wetted a day or more before it is used, as in that case the tops get nice and green. It should be well wetted after it is put together; then the short-stemmed flowers derive moisture from the moss, which keeps them fresh. The centre flower should consist of a Camellia, Rose, Gardenia, Carnation, or anything in that way that is white. Lily of the Valley, Maiden-hair, and Mignonette should go round the second course, and Ferns with Poinsettia, &c., round the third or finishing course. A foundation for dishes should consist of moss, clay, or silver sand, with Box stuck about in sprays, or Lycopodium planted on the surface. For trumpet-shaped vases use Box, Asparagus spray, Sweet Briar, or any evergreen that will look well.—W. H.]


Bouquet-holder half opened.

BASKET BOUQUET-HOLDER.

This simple and ingenious contrivance, recently figured in the *Revue Horticole*, is employed by some of the leading nurserymen at Bordeaux for the safe transmission of bouquets, which, protected in this manner, may be sent by train or otherwise, perfectly uninjured, for hundreds of miles. The figures require hardly any explanation, showing, as they do, a neat wicker-work bouquet-holder, empty and open in the one case; and, in the other, closed upon the bouquet which it contains, and ready for the journey. It will be seen at once that a bouquet thus guarded is in no danger of being crushed or rumpled, and, moreover, escapes the withering effects of being brought into contact with the warm hand, as it is when carried in the ordinary way. Its freshness is further maintained and prolonged by surrounding the lower part of the flower-stems with damp moss. A piece of string, passed round the "handle" of the bouquet and then fastened to the lower part of the holder, will keep the bouquet firmly in its place, and the holder may then be upset or even thrown roughly about without danger to its contents. The holder may be made in various sizes and shapes, to suit bouquets of particular patterns. That from which our illustration was sketched, measured a foot and a half in diameter and the same in height. We are not aware that this easily-made and useful little contrivance has yet found its way into this country; specimen patterns, however, can be obtained at the establishment of M. Cadeau, nurseryman and bouquetier, 58, Rue Fondaudége, Bordeaux.

Arranging Small Flowers.—I know that much difficulty is often found in arranging such small flowers as those of Violets, Hepaticas, Snowdrops, &c. The way in which I find them look best and easiest to manage is as follows:—I take a bundle or two of fresh-looking green Moss, and cut off the lower part so as to make the stems short; this I pack into a common saucer, till I make it quite a little mound of green Moss; I then take my flowers and tie them, say three in a bunch, with a little fine wire; this of course makes the stems stiff, which is what this small class of flowers require, to induce them to stand up firm in the Moss. Having placed them according to my fancy, I then take a few fronds of Maiden-hair Fern, or any other kind that may be at hand, and weave them in through the flowers. The edge I generally finish off with Ivy-leaves, sometimes plain and sometimes variegated; of course Ferns or anything else can be used, but I like the Ivy, as it lasts so long fresh. If a little water be poured in through the Moss every morning, so as to damp it well, it is astonishing how long the flowers will remain fresh. The Maiden-hair may go off a little, but a few fronds can be easily put in, which will brighten it up and make it look as fresh as ever. I did a little stand last week for the drawing-room, composed of double fresh Hepaticas, Snowdrops, Maiden-hair, and variegated Ivy leaves, which looked simple and pretty.—A. H., *Upper Norwood.*


Bouquet-holder closed and containing a Bouquet.

Flower Gum.—This may be made by pounding white shell-lac very fine and mixing it with methylated spirit in a stone jar to a proper consistency, well shaking it up for half-an-hour, and placing it by the side of a fire to keep the bottle warm, and occasionally shaking it for about a day. Pure spirits of wine may be used, as it does not smell so strongly as that adulterated with naphtha. The former does not smell after it is dry and is much cheaper than the others. Keep the shell-lac in the water at all times until it is made up. The gum may be kept in any cool place and a little taken out as it is wanted, leaving the camel-hair brush in the gum. A good brush may be made of a bit of human hair placed round a stick fixed thereon by means of a bit of flexible wire. In gumming never fill the brush too full, and the petals should be gummed close to the tube.—W. Howard.

Acacia Lophantha.—I have a plant of this which has been growing in my dining-room throughout the winter, and is now well furnished with its delicate and elegant leaves. I bought it from a hawker last September, and have never had a more satisfactory window plant.—Maria A. S.

Drills for small Seeds.—Making drills for small seeds is best done by pressing the edge of a lath or thin board into the previously-smoothed soil. This makes a drill that is perfectly smooth at the bottom—where the seeds can be distinctly seen, and if the sowing is not properly even it can be made so, which cannot well be done in a rough drill made by scratching the soil.

THE FRUIT GARDEN.

MELON CULTURE IN COOL PITS.

The development of the bedding or massing system of tender plants in flower gardens has rendered the erection throughout the country of large numbers of cheap, shallow (comparatively speaking), cool pits necessary, in order to provide for the wants of this class of plants in the early spring months, and it is concerning the utilisation of this class of structures I now wish to speak. The facilities for the culture of early Melons in the shape of large quantities of stable dung, or artificially heated structures adapted to their wants, do not exist in all gardens; but everybody who has a pit or two for bringing on bedding plants has the means within his reach of securing a supply of good-flavoured Melons at least in August, September, and October. In Melon culture, without much artificial heat, one of the chief elements of success lies in the selection of suitable kinds for the purpose; and one of the best varieties I have hitherto tried under cool treatment is Gilbert's Victory of Bath. It is a green-fleshed kind, possessing a hardy, vigorous constitution, sets freely, is of good flavour, and, I may add, is first-class in every respect. Amongst scarlet-fleshed kinds we have hitherto found Scarlet Gem most useful, the only objection to it being its size—it is rather too small. I, however, intend trying this year Munro's Little Heath. This, judging from its description, should be the very thing we want for summer culture.

The end of March is early enough to make the first sowing, to have strong plants to turn out the first or second week in May, and a pit may generally be spared by that time, as many of the hardier kinds of bedding plants will then be hardening off in the open air. Another sowing may be made about the middle of April, and a third about the end of the month, will furnish a succession of plants for planting all the pits as they become vacant. When the first pit is clear of bedding plants, clear it out and have it thoroughly lime-washed, and filled to within a foot of the glass with any fermenting materials that may be at hand. Stable dung is the best, treading it well down; the object is to get a nice root warmth to start the plants till we have warm summer weather. When the heat has subsided a little—and as the bulk is not great it is not likely to be violent—pack into the centre of each light about three barrow loads of good strong turfy loam, levelling a little of it down to the back and front, in order to keep down any noxious gases that may arise from the fermenting material. In two or three days, when the soil is nicely warm, the plants may be put out, and unless the lights or sashes are very large, one plant in the centre of each light will be sufficient. There is never anything gained by crowding, but rather the reverse. The pits must be matted up at night, unless the nights are quite warm in July. The after management is very simple, the great secret of success being, timely attention to their wants, which may be shortly summed up thus:—

In planting take care that there is room for the full development of the foliage, without coming into contact with the glass, and then, if the ventilation is attended to, there will be no fear of scorching. Attend frequently to the stopping and pegging out of the shoots; to allow them to grow into a thicket, and then to be compelled to use the knife, to amputate strong growths, is bad. Earth them up as soon as they have fairly begun to run, pressing down the soil rather firmly. A firm soil checks grossness of growth, and promotes fruitfulness. Sprinkle them about half-past three o'clock on the afternoons of fine days with water that has stood in the sun all day, shutting up at the same time.

When a sufficient number of fruit for a crop is set (and with summer Melons there is not much difficulty about this matter, for bees and insects generally perform that part of the work after May) cut off all that are not required, and mulch the beds over with short manure. During the time the fruit is swelling, Melons take a good deal of nourishment, and the mulching will be a great support to them. Red spider is the greatest enemy with which Melons have to contend in the way of insect pests, but by taking care that the pits are cleansed and whitewashed annually, sprinkling, and shutting up early on fine days, giving air early in the morning, to be followed by a free circulation, but no shading, and moderate root watering, with water from which the chill has been taken—if all these things are attended to there will not be much trouble with regard to red spider. Whenever, however, it has by any neglect or oversight effected a lodgment, the best remedy I have ever found for it is, after the morning ventilation has been given, on a warm sunny day, to close the pit, having previously thoroughly saturated its atmosphere with clean soft-water, by syringing the walls and every available part of the interior, so as to fill it with a dense vapour, and to keep it closed several hours, if necessary repeating the syringing and slightly shading if the day is very hot. The theory upon which this cure depends is this: red spider thrives amazingly in a high dry atmosphere, but moisture in any state it abhors; and a close, warm, moist atmosphere is death to it. I have always found this remedy efficient if taken in time, in the case of both Melons and Cucumbers. Of course when the leaves are destroyed by it nothing will resuscitate them. The two most fertile sources of red spider on any plant are, extreme dryness either at the root or in the surrounding atmosphere, and deficient ventilation. As the fruit approaches maturity, less moisture must be given, especially at the roots; although, if the weather is very bright, a light sprinkling or dewing over with a fine rose in the afternoon will help to keep the foliage healthy, and without healthy foliage finely-flavoured fruit cannot be obtained.

E. Hobday.

RENOVATING OLD VINES.

About six years ago an amateur consulted me about a house of Vines that were in a most unsatisfactory state. They were from fifteen to twenty years of age, and ought to have been just in their prime. Before consulting me he had been advised to root them up and plant young ones. I examined the border, and found, as I expected, the roots had travelled beyond it into the cold wet subsoil, which had brought on shanking to a most alarming extent. The old border, which was in a bad state, was entirely cleared away, saving as many as possible of the roots. The drainage was seen to, and a new border of chopped turf (in which a little bone-dust was incorporated) was made, the roots were shortened and carefully laid out, and the border was well mulched with manure; the rods inside the house were thinned out and shortened a little. They were allowed to break almost naturally the next season, and the result was a crop of good fruit with scarcely a shanked berry; whilst before they were lifted it was no uncommon thing to see whole branches go off. Many houses of old Vines have been cleared off, and a scarcity of Grapes submitted to by the proprietors whilst young Vines are getting up that might have been got into good condition without sacrificing a crop. There are old Vines enough in the country to prove that, under ordinarily favourable conditions, the Vine will live and be fruitful to a vast age. There certainly is never an "effect" without a cause; and when a house of Vines, or indeed anything else, turns out unsatisfactory, before any reliable data can be arrived at sufficiently conclusive to suggest a remedy, the cause of the disaster should be ascertained. Old vines may be rooted out and young ones planted; but if the same causes continue to operate, the chances are that the young Vines at no distant period will go the same way as the old. The disease called "shanking" is caused by a deficiency in the supply of nutriment at a critical period of the growth of the fruit, and this deficiency frequently arises from the roots penetrating into a cold subsoil. Having travelled beyond the prepared border, they become in an ungenial soil sluggish and inactive, and are consequently unable to supply the heavy demand made upon them, and the fruit fails.

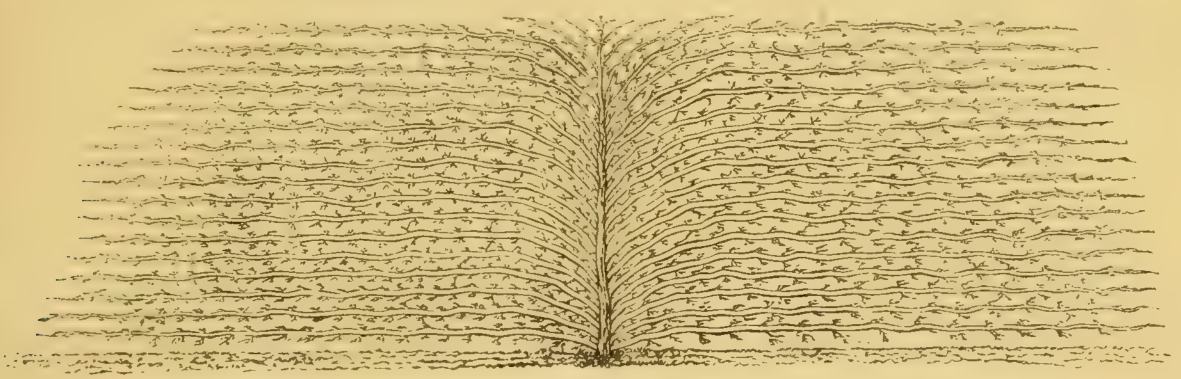
Another fruitful source of shanking is making the borders too rich and heavy, and neglecting the drainage; and I have investigated one or two cases where I was satisfied it arose from lack of moisture at the root. Extremes of all kinds are bad. Vines in dry seasons should be well supplied with water, especially in shallow borders. The exhausting influence of a heavy crop of fruit for a series of years, especially in late houses, where the fruit is required to hang a long time, tends to induce shanking; and it is the knowledge of this fact that has induced many good cultivators to cut the Grapes when ripe, and preserve them by inserting the ends of the shoots in bottles of water, thus relieving the Vines of their heavy burden, to their manifest advantage. I lately had an opportunity of visiting one of our best Grape-growers, and, in a conversation about old Vines, he remarked that one of his best houses last year was furnished with the same old Vines he found there more than twenty years ago, but of course they have been thoroughly well managed, both roots and branches. In making a Vine border, the first requisite is thorough drainage; the next is a good supply of chopped turf from an old pasture. This chopped turf formed the staple of all the best Vine borders I have ever seen; and I believe very good Grapes may be grown in it alone, without any addition whatever. Of course I am not against adding crushed bones where necessary, or, if the loam is heavy, old mortar or charcoal may be added with advantage. The only way of keeping Vines in a good bearing condition for many years is to look well after the roots, for when any falling-off is observed, there generally the cause must be sought for, and the remedy of lifting and shortening the roots applied, adding at the same time a further supply of chopped turf. The majority of the Vine borders must of necessity be less than twenty feet in width; but the roots, unless they meet with an impenetrable barrier, wander on until they get beyond this limit, and soft and spongy unripe wood, with other evils, soon follow. Of course, I know there are places so favourable for Grape growing that almost without any extra care in this way good Grapes are grown.

I knew a gardener at an old abbey in the south of England, years ago, who always annually opened his Vine borders, and ran in such a dressing of pig-dung as would have frightened many people; but the soil was very porous, and in all probability the principal roots were many yards away, revelling among the bones of the monks interred there centuries before, for the Vines were very old, and always bore well. I remember also more than twenty years ago visiting a garden in the North of Ireland, where the Vine borders were ridged up like the other portions of the garden (of course, the roots were gone out of the way of the spade), and still fair Grapes were produced. These, I admit, are exceptional cases, which only go to prove what an accommodating plant in some soils and situations the Vine is. Some years ago, I had an early vinery under my charge, where the Vines were confined altogether inside the house in a very narrow border, not more than 5 feet or 6 feet wide, and very good fruit of Hamburghs and Muscats were grown; but every autumn the old soil was taken off the surface down to the roots (of course, a few of the small roots were inevitably destroyed), and the space filled up again with chopped turf and manure. Inside borders may be made richer than would be safe for outside ones; there is then not the same necessity for feeding them to such an extent with strong liquids, which I have seen in more than one instance act injuriously, especially in the colouring and finishing process. It is also desirable to lead up a new rod occasionally; it infuses fresh life and vigour into old Vines to be gradually renewed in this way, as when the old Vines have been pruned many years on the spur system, they are apt to look ugly and cumbersome, and the bunches become smaller. Therefore, if larger bunches are wanted, a continual but gradual accession of young rods will render the produce as large, perhaps larger, than that obtained from younger Vines, and the flavour of the fruit from old-established Vines is generally admitted to be superior to that of fruit got from young ones.—*Field.*

Seacliffe Black Grape.—I am glad to see that Mr Fish, in his notes on the gardens at Drumlanrig, still persists in calling the famous variety of Grape which he saw there by the distinguishing name of Seacliffe Black; the more so as we have been told in the pages of a contemporary that it is synonymous with the Gros Guillaume. Having seen the Grape which Mr. Fish so justly admires, permit me to corroborate his opinion as to its being distinct from, and vastly superior to the last-named variety, or what is now considered to be identical with it, viz., the Barbarossa. Grapes, like other fruits, vary much according to the favourable or unfavourable position in which they are placed. I find that Gros Guillaume, though a late Grape with a good constitution, is one of the first to give way, if at all over-cropped, or in any way subjected to unfavourable treatment. I have seen it under such circumstances so much degenerated, that even with careful inspection it was difficult to identify it with properly ripened fruit of that variety. On the other hand, I have also found it to attain the highest possible perfection of which Nature assisted by art is capable, yet never have I seen it attain such excellence as the variety which I hope still retains the name of Seacliffe Black at Drumlanrig. The season of 1872 was one of the most calamitous ever experienced by Grape growers as regards maturing Grapes, yet Seacliffe Black, though under the deleterious influence of Phylloxera, ripened a crop of fine fruit, when Gros Guillaume, even under the most skilful treatment, would have failed. Regardless of this distinction, Seacliffe Black possesses a character of its own sufficiently good to render it a favourite. Nor is the opinion which I now advance based wholly on the vines at Drumlanrig, for years ago when the original Vine at Seacliffe was the only one of the kind in the country, I came to the same conclusion.—J. Hastings, *Preston.*

A FINE PEAR TREE.

The Pear tree of which we this week give an illustration is one of the largest we have seen, and is a fine example of training. It grows against a wall in the gardens at Ashridge Park, Berkhampstead, and our representation is reproduced from a photograph taken for The Garden. The tree is of the Passe Colmar variety, and as far as the head gardener, Mr. Sage, can ascertain from one of the old garden men who assisted in planting it, is forty-six years old. It is 56 feet long and 14 feet high, is kept close to the wall, pruned on the spur system, and bears abundantly.



A fine Pear Tree at Ashridge.

Wall-fruit Prospects.—The few mild, sunny days which we have had have swollen up the flower buds of Peaches and Nectarines to the bursting point, some of the earlier sorts being, in fact, quite open. The wood looks stout and well ripened, and there is at present every indication of good wall-fruit crops. The dull, cold month of February proved most effective in checking that early expansion of the flowers that seemed to be so close upon us at the end of January, and now there is hope that the bloom will escape injury. I have growing on the front of my cottage, facing the south, a large tree of the Hemskirk Apricot, a goodly number of the blooms on which were expanded on the 2nd inst. It is protected by a projecting eave 20 inches in width, which is, of course, permanent. I incline to the belief that if all our fruit walls had permanent projecting eaves of about 12 inches, the trees would suffer no injury in growth, and would be greatly protected from frosts.—A. D.

Vines.—Some of the young leaves of my Vines have a withered, blighted look, like those which I have sent you. Can you kindly tell me what ails them? P. L.—[The Vine shoots sent for inspection have all the appearance of being scorched, either by water being poured on hot flues or pipes, or by a hot sun in the middle of the day, acting on the glass without ventilation in the house. The appearance which the foliage presents would likewise be caused by being frost-bitten, if any panes in the glass were broken, or where the temperature of the house fell below the freezing point. I do not think that Vine mildew has caused the injury, for I have never seen it appear so early, and the withered foliage has not that peculiar scent which is so indicative of mildew. The only remedy, if the foliage and young bunches of fruit are much injured, is to keep the house at a low temperature until fresh foliage appears, when the temperature may be gradually raised, for the purpose of ripening the wood properly for a crop next year. -William Tillery.]

Spur-pruning of Fruit Trees.—Overbearing, as regards fruit, is an evil to be guarded against as much as possible, as it enfeebles the constitutions of trees and brings on premature decay. Spur-pruning and thinning of the fruit are the best means of preventing this. I would, therefore, strongly advise that all trees should be carefully and judiciously spur-pruned, when the state of the weather permits it to be done. Through the almost total neglect of this, one of the most important operations in fruit-tree culture, we generally see trees one year bent to the ground with the weight of fruit, and the following year no fruit at all; and this goes on year after year. One season a heavy crop of inferior fruit, the next year none. When the trees bear these heavy crops, the fruit is never so fine as it would be if it had been properly thinned. The thinning of the blossom and fruit is an operation which cannot be properly carried out to a very great extent, as it is in general a busy season when such work requires to be done. Spur-pruning should, therefore, be regularly attended to and carefully performed. When the spurs are crowded, all the longest and weakest should be cut clean away, and on those that are left the buds should be well thinned out; all the weak buds and those on the ends of the spurs should be cut clean off, leaving the roundest and most plump, and taking particular care of those at the base of the spurs. When pruned, the buds should be left at such a distance from each other that the sun and air should have full influence on them. On old trees that have been neglected, spur-pruning can hardly be too freely carried out.—M.

Manure for Fruit trees.—Woollen rags, sprinkled over with soda or potash, and then allowed to decompose in heaps, have been recommended by the late Dr. Wttewaall, as the best possible manure for fruit trees. In a number of experiments made by him to test the comparative merits of woollen rags so prepared and ordinary stable-manure, he found that young trees especially grew far more vigorously when treated with the former. His mode of applying the rag-manure was to place 5 or 6 lbs. of it around each tree at a depth of 4 inches from the surface, covering it in with ordinary soil. Some soil was also placed over the roots, in order to prevent the rag-manure from coming into direct contact with them. The results of his experiments appear to have satisfied him, in every case, of the immense superiority of the rag-manure.

Vines in Pots.—I have some Vines in 12-inch pots just beginning to grow. How am I to feed them during the season? I have a good supply of sheep's dung and liquid manure. How many bunches should be left on each plant, and will the plants be available another year?—M. Ryan. [Plunge your pots half their depth in a bed gently heated, if possible; but if that cannot be done, as they are fairly started, the loss will not be great. Put a mulching, consisting of equal parts sheep's dung and loam on the surface of the pots, and after that has become exhausted through repeated waterings, use occasionally weak manure-water, made from sheep's dung, until the Grapes begin to colour, when pure water only must be given. From six to ten bunches may be left on each Vine, but seven is the ordinary number, though strong plants, liberally fed, will ripen off well from eight to ten on each Vine. If, however, you intend to crop the same Vines a second season, or want them for planting out permanently, take only about five bunches off each Vine. Under all circumstances, good, healthy, and clean foliage is of primary importance.]

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Pigs in Orchards.—Among the points of interest discussed at the annual meeting of the Ohio State Horticultural Society, was the use of pigs in Apple orchards as cheap and effective cultivators of the soil, and destroyers of worms, grubs, &c.

Pears on the Quince.—Pears are commonly grafted upon a Quince stock; but it is supposed that there are more than forty varieties which refuse this union, and which are therefore managed by double grafting upon a Pear stock of a proper sort which has itself been grafted upon the Quince. Professor Decaisne on the first trial of such an experiment under his own observation succeeded with twenty of these antipathetic varieties without difficulty; but some (among which are Clairgeau and Beurré Bosc) obstinately refuse to unite with the Quince stock.

Seedless Apple.—A correspondent has sent to the *Gardener's Monthly* two samples of a seedless Apple, which he considers a valuable acquisition. It is a regular and prodigious bearer, long keeper, and vigorous grower; it is worthy of general cultivation, and saves much time in preparing it for the table, as it needs not to be cored. The flower is without petals, and apparently without pistils. The flavour is excellent, something akin to that of a Newtown Pippin, from which it may be a seedling. It is, however, smaller than an average Newtown.

"BIG TREES" IN CALIFORNIA.

THE THREE SISTERS.

One of the greatest curiosities in California, and, indeed, of its kind in the world, consists of the Big Tree grove, situated on the space between the middle fork of the Stanislaus and the Calaveras river, about twenty miles east of Mokelumne Hill, and at an elevation of 4,759 feet above the level of the sea. The number of these trees, a species of Redwood bearing the botanical name of "Sequoia gigantea," is ninety-two, ten of which are at least 30 feet in diameter; eighty-two having a diameter varying from 15 to 30 feet. Their height, as they now stand, ranges from 150 to 327 feet, the tops of many of the more aged having been broken off by the tempests or snow. The original height of some is believed to have been over 450 feet, and their diameter at least 40 feet. Through the prostrate trunk of one of these trees, which has been hollowed out by fire, a man can ride on horseback for a distance of 75 feet. Some years ago one of the largest of the number then standing was cut down, with a view to secure transverse sections of the trunk for exhibition. It was 92 feet in circumference and 300 feet high, and it required the constant labour of five men for twenty-two days to fell it—the work being accomplished by means of boring with long augers. At the same time, another tree of nearly equal dimensions was stripped of its bark for a distance of 116 feet from the ground, a lofty staging having been erected about it for the purpose. The bark was taken off in longitudinal sections, which, being afterwards replaced in their proper order, reproduced the exterior of this giant of the forest—having much the appearance that it presented while growing. Such was the wonderful vitality of this tree that many of the branches still continued green for seven or eight years after this extensive mutilation. By carefully counting the concentric rings, denoting the annual growth of these trees, their age is found to vary from one thousand two hundred, to two thousand five hundred years. In some places these trees are separated by spaces of several rods, while in others they stand quite close together, some being united at the roots, and having grown almost into one, which, when they first sprouted, were 20 or 30 feet asunder. Our illustration represents one of the most beautiful and singular groups in the Calaveras grove, known as the "Three Sisters" or the "Three Graces." The name is well applied, and suggests itself at the first sight of these tall graceful trees standing side by side, with their branches intertwined, as in an affectionate embrace. Their similarity in size and appearance is very remarkable, each being in fact the counterpart of the other two. They measure nearly 295 feet in height, and the circumference of the three together round the base is no less than 92 feet.

The Calaveras grove, though really one of the most remarkable, and, from its accessibility, by far the most frequented, is not the only one in this State, there being three groups of big trees in Mariposa, one in Tuolumne, and another in Tulare county, with, perhaps, others not yet discovered in the adjacent but less explored portions of the Sierra Nevada.

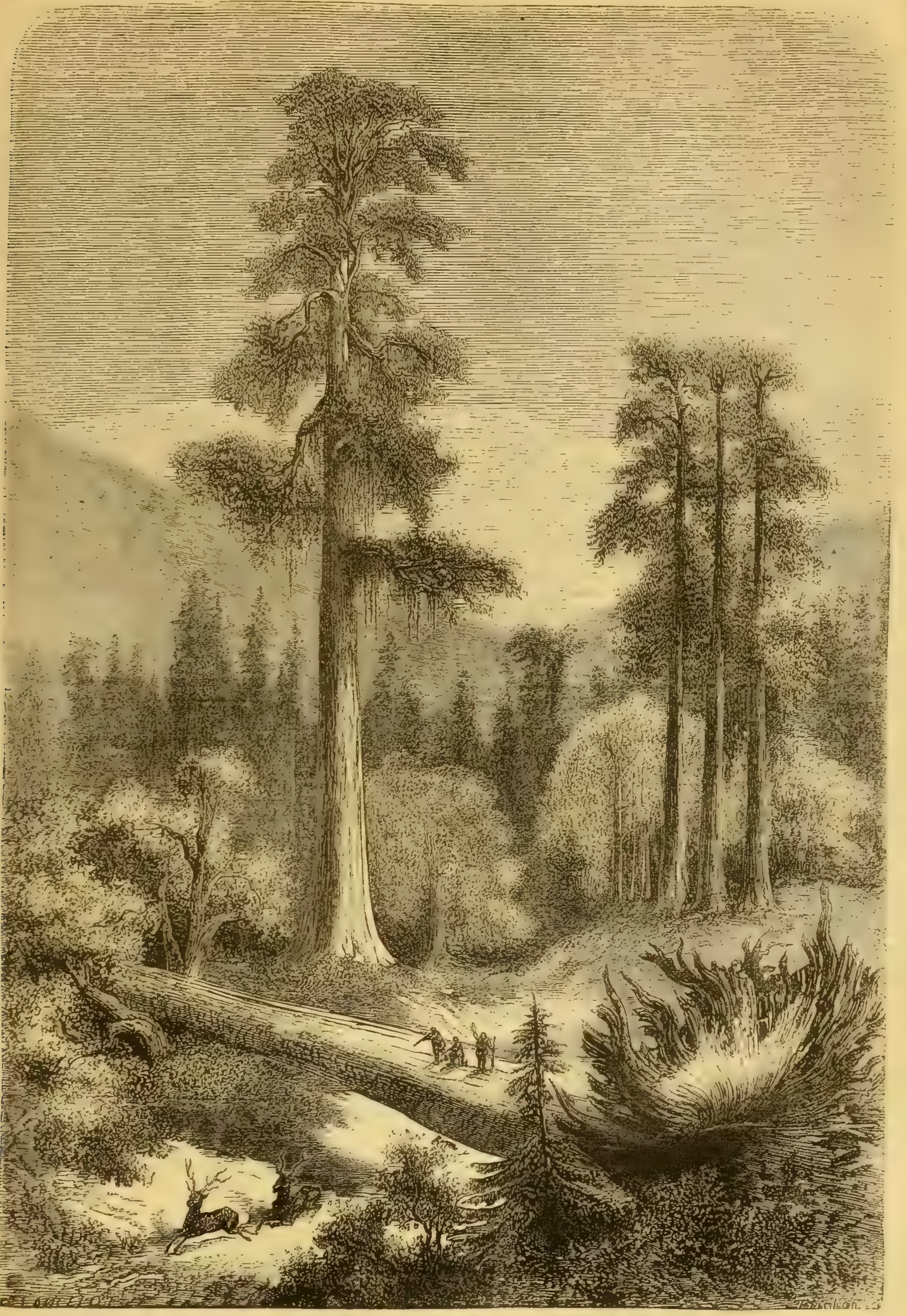
THE VOICE OF SPRING.

Hark! the Spring again
From their bowers hidden
All her tender train
Blithesomely has bidden.

"Wake, O wake! for now at last
Cruel Winter's reign is past."

See her little babes the buds,
Rosy-red with innocent sleep,
From their cradles in the woods
Pretty wonderers upward peep
Through the unfathomed firmament.
Now with earthward gaze intent
Eager mark how far below
Golden flowers and flowers of snow
Gladden all the garden-row,
Or, like stars on quiet seas,
Daisies light the verdant leas;
Whilst the faithful robins sing,
"Cruel Winter turns to Spring."

—*A. P. Graves, in Fraser.*



"BIG TREES" IN CALIFORNIA (THE THREE SISTERS.)

THE DARNEL GRASS NOT POISONOUS.

In a paper on Lolium temulentum (Darnel Grass), read by Mr. A. S. Wilson at the January meeting of the Edinburgh Botanical Society, the author remarked that the purpose of his investigations was to discover if there are poisonous qualities in the seeds of the Grass called Darnel. The seeds of this plant appear to have been objects of alimentary aversion from remote times. To what Virgil refers in the expression, "Infelix Lolium" (Georg. B. I. 153) cannot now be determined. It is uncertain, indeed, if he refers to Bearded Darnel as a single plant, or includes various Grasses. And that the poet-farmer had in his mind rather the conception of troublesome weeds than of poisonous seeds, seems probable from his conjoining wild Oats with the Darnel ("Infelix Lolium et steriles dominantur avenæ"). Pliny speaks ("Nat. Hist." 18, 17) of Lolium and other weeds as being the pests of the corn fields, but does not allude to poisonous properties. If the old Greek and Roman farmers are truly represented by Columella and Theophrastus, they entertained the notion that the cereal Grasses were constantly changing into each other, and that the damaged seeds of these gave rise to Darnel.

The present position of the question may be seen from the following references. The name temulentum signifies intoxicating. Lindley, in his "Medical and Economic Botany" (2nd ed., p. 27), describing this Grass, says, "Grains narcotic and acrid, producing fatal consequences when mixed with flour. N.B.—This is the only authentic instance of unwholesome qualities in the order of Grasses. The cases mentioned in the 'Vegetable Kingdom' are all doubtful." In the "British Flora," Hooker tells us (4th ed., pp. 16, 19) "the ancients as well as the moderns attributed poisonous qualities to the L. temulentum, and even now it is believed in some countries that the Wheat changes into Darnel." He further tells us that the name Aira (from airo, to destroy) "was anciently applied to the Lolium temulentum (Bearded Darnel) on account of its injurious effects." In Balfour's "Class Book of Botany," paragraph 1539, we read, "Lolium temulentum, Darnel Grass, supposed to be the Tares, Zizania, of Scripture, has been said to be narcotic and poisonous, but this has not been fully proved." Bentley remarks in his "Manual of Botany" (p. 697), "Almost all Grasses are wholesome, but one or more species of Bromus have been reputed erroneously to be purgative, and one, Lolium temulentum, is said to be narcotic and poisonous. The powerful properties of the last Grass would appear to be due to its becoming ergotized, as its described effects upon the system closely resemble those produced by the common Ergot." In Lawson's "Agricultural Manual," article "Lolium temulentum," it is stated that "the seeds, if very abundantly mixed with wheat and made into bread, prove injurious to health, causing delirium and stupefaction." Under "Darnel," the "Imperial Dictionary" says, "The L. temulentum, or Bearded Darnel, is the only poisonous British Grass. It is said to be the infelix Lolium of Virgil, and the Tares of Scripture. Its properties are said to be narcotic and stupefying." Archbishop Trench, in his "Notes on the Parables" (Parable of the Tares) also accepts the dogma of the toxical quality of the Darnel.

On the other hand, the writer of the article Darnel in "Chambers' Encyclopædia," says:—"It is asserted that very recent researches on the continent have completely established the perfect harmlessness of this Grass and of its seed, and the effects which have been ascribed to it must, therefore, be regarded as proceeding from grain injuriously affected in some way by bad weather." These researches I have not seen.

Through the kindness of Professor Balfour, I obtained a few seeds of Darnel from the Royal Botanic Garden, Edinburgh. To guard against accidents, some of the best ripened of these, stripped of the husk, were planted in pots in which they stood during the winter (1871-2). The plants were transferred to the open ground early in spring. They grew remarkably well, appeared unchecked by transplanting, and threw out from ten to fifteen stems each. The rest of the seeds were sown in spring. But as they were not well ripened, only about a score of plants appeared. These did not tiller so well as the former, and although some of them attained a greater height, the spikes were not so well developed. The average height of the stems was about three feet. The best had from sixteen to nineteen spikelets, and the best spikelets had nine fertile florets or seeds. Into eight of the flowers when open, some of the spores of a fungus growing upon the ergot of Oat-grass (Arrhenatherum bulbosum) were introduced in a fresh condition. But none of the seeds so treated were ergotized. Although superabundance of moisture has been thought to favour the somewhat uncertain cause of ergot, yet notwithstanding the presence of this agency in 1872, the grasses in general were much more ergotized in 1871. And not above two dozen kernels of my Darnel were affected.

The very imperfect microscopic analysis which I have been able to make of the Darnel, points to the possibility, if properly examined and tested, of arriving at the whole chemistry of such a fruit. In this way I have compared the Darnel seed with the seeds of several other Grasses.

The author then gave a detailed description of the microscopical structure of the Darnel seed, and compared it with that of Wheat and Barley. He said:—The grains of Darnel experimented with were partly ripe and partly slightly unripe; they were air-dried and may have contained about ten per cent. of water. Ergotized kernels were rejected. It may also be noted that the quantities eaten were written down immediately on being taken in case of fatal consequences. The result was added a day or two after.

1. Two grains (eight ripe kernels) were reduced to meal in a mortar, mixed with cold water and drank, Sept. 30. I felt no symptoms of any kind.

2. Before breakfast next morning I pounded four grains (sixteen kernels) mixed with water and drank as before. No symptoms experienced.

3. I next ground a considerable quantity of the seeds. The paleæ were separated from the meal by a pepper-box. The meal contained nearly all the bran. It has a slightly yellowish tinge and is whiter than ordinary oatmeal. Of this Darnel meal I baked a cake of 100 grains, dividing it into eight parts. Two of these parts (twenty-five grains) I ate before breakfast, Oct. 8. The taste is similar to that of well-baked Oat-cake. Towards night I fancied that I felt a slight grinding sensation in the stomach. What I had for dinner might have produced this; it lasted only for a few minutes. There was no giddiness, nor any other symptom.

4. Oct. 10. Ate fifty grains more of my Darnel cake. Experienced no peculiar sensations of any kind, either in the stomach, bowels, or head.

5. Oct. 15. Made 100 grains of meal into pottage. It thickens about as much as Wheat-meal; is of a gluey consistency; the colour like Rye-meal pottage; with a taste not much different from Wheat-meal pottage, and certainly anything but "acrid." I ate the 100 grains with milk. No symptoms of any kind were experienced.

6. Thus far finding nothing poisonous, and knowing that in remote times the husks or paleæ of the cereal grains were incompletely removed from the meal, which might thus contain husks of Darnel, I tested their husks. The husks of Darnel, it may be stated, correspond to those of Barley and Oats, not to the bran of Wheat and Rye. Of these husks 94 grains (the husks of about 100 seeds) were beaten up in a mortar with 70 grains of Darnel meal. And as Lindley and others speak of fatal consequences resulting from Darnel mixed with Wheat flour, a small quantity of whole red Wheat meal was added to the not very tempting mixture. Of this I baked an unfermented cake, Oct. 17. Ate one-fourth of this cake, containing 23.5 of Darnel husk, 17.5 grains of Darnel meal, and about half an ounce of Wheat meal. No symptoms followed.

7. Oct. 18. Ate part of the remainder of my cake before breakfast, and part after. The amount of husk was 70.5 grains, and of Darnel meal 52.5 grains. In other words, the husks of 2,000 seeds, and the meal of 262. No sensations or symptoms of any sort were experienced.

8. I next baked 310 grains of Darnel meal, equal to about 800 seeds, with yeast in the usual way in which wheaten bread is fermented and baked. Probably being whole meal it did not swell much in baking. It behaved in a manner similar to whole Wheat meal. The colour is dark brown. Rather too much yeast and salt had been used, so that the taste was less agreeable than it ought to have been, but still nowise "acrid." Oct. 27. Ate two slices with butter at breakfast, containing about 42 grains of dry meal. I was in no way aware of having taken anything peculiar.

9. Next day I ate before breakfast the remainder of my Darnel loaf, containing of dry meal about 348 grains weight. No peculiar sensations either in the stomach, bowels, head, or elsewhere were experienced.

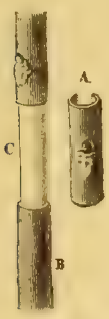
Thus, between the 30th September and 28th October I ate 561 grains of Darnel meal, equal to about 3,300 seeds, and 94 grains of Darnel husk, equal to the husks of about 3,100 seeds. The doses varied from 2 grains to 248. In my case, therefore (not to generalise), Darnel in such doses is not justly called "temulentum," its seeds and husks are not "infelix," are not "narcotic," are not "acrid," are not "unwholesome," are not "injurious," do not cause "delirium," do not produce "stupefaction," and are not "poisonous" nor productive of "fatal results."

Whether the poisonous qualities attributed to Darnel resided in the ergotised seeds of this and the many other grasses which infested the ancient corn fields, is a much more difficult inquiry.

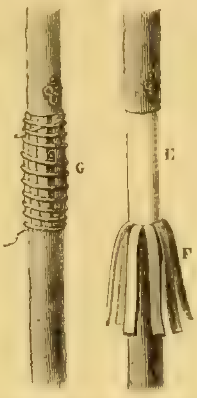
THE PROPAGATOR.

THE ART OF GRAFTING.

Flute-Grafting.—General Directions.—The name of flute or whistle-grafting has been given to this method in consequence of the resemblance which exists between the manner in which the bud is detached and the means employed in making rustic flutes with tubes of bark taken from a branch in full sap. At present this mode is not much used in nurseries. Although it has been superseded by more expeditious methods, some persons still use it in propagating the varieties of the walnut, the chestnut, the mulberry, the fig, and the cherry. The season for flute-grafting is in spring, when the sap has begun to flow. It can also be carried on towards the end of summer, before the new generative layers are dried up by the cessation of vegetation. There are two principal methods of flute-grafting, in both of which the scion is prepared in the same manner. The scion (A) is a portion of bark of a tubular form, furnished with at least one bud. It is detached from the scion-branch by making, in the first place, a circular incision with the grafting-knife about an inch above the bud, and another at the same distance below it. These two incisions mark the length of the scion. A longitudinal incision is then made from one to the other on the side of the branch opposite the bud. The base of the leaf-stalk attached to the bud is then seized between the finger and thumb, and the portion of bark included between the incisions dexterously detached. Should there be any apprehension of tearing the fibres—commonly called the germ or root—of the bud, the bark may be raised with the spatula of the grafting-knife. The scion is then applied to the stock in the place of a cylinder of bark of the same length, which is removed at the same time. The operation is best performed in calm weather, in order to avoid injuring the internal layers of the subjects by exposure. The practice of trimming the stock beforehand, with the view of promoting the union of the graft, is a faulty one. It is more rational to graft first, and to head down the stock afterwards when the union of the parts is ascertained. A stock in a young and herbaceous state is better adapted for flute-grafting than one which is old or hardened; and a stock which is very large should be grafted on its branches rather than on the stem. When strips of bark are used to fill up any vacancies not covered by the scion, it is seldom required to apply mastic to the joinings.



Ordinary Flute-Grafting.



Flute-Grafting with strips.

Ordinary Flute-Grafting.—The scion (A) is applied to a stock (B), which has not been previously headed down, in the place of a cylinder or pipe of bark of the same length, and which has been removed in the same way. It is placed so that its bud may be exactly underneath a bud on the stock. This bud will attract the sap to the graft, and thereby promote its taking. It is then bandaged, and cold mastic applied to any exposed parts of the joinings. Should the diameter of the scion exceed that of the stock, that is easily remedied by cutting off from the scion a longitudinal strip of bark equal in width to the difference. On the other hand, should the dimensions of the tube of the scion not correspond with those of the stock, the deficiency is made good by leaving on the latter a strip of bark of sufficient width to fill up the space not covered by the tube of the scion; or, if the bark of the stock has been taken off in a complete ring, a strip of bark of suitable size can be inlaid on the bare part.

Flute-Grafting with Strips.—The scion having been prepared as in the preceding case, the bark of the stock is cut in longitudinal strips (F) attached by their bases. When the scion is quite prepared, these are turned down, and the scion is at once placed on (at E). The strips of bark are then brought up over it (as at G) and the whole bound round with a bandage. This process permits us to detach the scion without leaving the wound on the stock too long open, and also to prepare the stock before the scion has had time to flag. These strips also serve to cover bare places that occur when the scions are not wide enough. We practise a mode of flute-grafting with double strips. In this the stock is amputated, and both stock and scion are of the same diameter. The bark of both is cut in strips and turned back, and the wood that was under the strips of either stock or scion is cut away. The scion and stock are then placed end to end, and the strips of bark brought back over each and bandaged. This method is quite original.

Treatment after Flute-Grafting.—As in every kind of grafting, the bandaging must be looked after, and not allowed to become too tight, and a prop or stake higher than the graft must be affixed. If the head of the stock is overloaded with branches, some of them must be cut away. The manner in which the stock is finally headed down depends on the nature of the graft: if it has been made with a pushing bud, the stock is cut away by degrees down to four inches from the graft—not commencing to do so, however, until the union of the parts is ascertained; if the grafting has taken place in the course of the summer, the heading down of the stock is deferred until the following spring, when it is performed by a single cutting.—*L'Art de Greffer.*

NEW ROSES OBTAINED BY GRAFTING.

From a report made to the Royal Institution of Venice by Professor Di Visiani and Doctor Zanardini, who had been commissioned in last August to make inquiries into the matter, we extract the following:—"In the month of September, 1871 Signor Zea, residing at Venice, performed three experiments with the Roses known to gardeners under the names of Malmaison rubra, Colonel Foissy, and Cardinal Patrizio. The grafts were taken from flowering branches of the varieties above named; they were shield-budded, and the sutures fastened round with strips of lead sealed at each end with sealing-wax, bearing the impress of our seal. All the grafts took well, and two of them bloomed in May last; we have waited in vain for the flowering of the third, the young shoots having been destroyed by insects. But the two first experiments sufficed to show that the blooms were very different in form, in tint, and in certain markings of a very intense colour. After careful investigation, and having put numerous questions to the operator, we received from him the following statements:—1. That in the second, and still more so in the third year, when the grafts become stronger and more vigorous, the markings are much more conspicuous and the colours generally brighter, as we saw in other older varieties obtained by him in the same way, the markings of which were very decided and the colours truly brilliant. 2. That the varieties so obtained remain constant when layered or grafted by cleft-grafting or shield-budding in the ordinary way. 3. That if they are lost they can be reproduced by repeating the operation under similar conditions. 4. That all varieties of Roses do not give equally good results. Some give varieties of finer colour, and better marked than others. Being unacquainted with those portions of the process beyond that of ordinary shield-budding, we feel bound to confine ourselves to a simple attestation of the fact that the blooms seen by us were very different from those on the branches from which the buds were taken. Signor Zea, in his letter, has shown himself disposed to communicate his method of operation to this institution. This would be very desirable, as it is only when the process is known that we can look to science for a possible explanation of the results so obtained."

PROPAGATION OF CAMELLIAS.

Camellias may be propagated by cuttings at any time; the most favourable season, however, is during the month of January. The cuttings are usually taken from plants of Camellia japonica, which are cut back every third year in order to furnish vigorous shoots. Plants which are intended to be grafted also afford many very good cuttings. In all cases, select vigorous and healthy shoots of the current year, rejecting unreservedly any which have diseased leaves or any other imperfection. Having carefully washed them, cut them with a very sharp knife into lengths of from 2 to 4 inches, preserving one or two leaves, and making the lower cut, if possible, at the base of a leaf or bud; then make a longitudinal incision about a line in length on the base of the cutting. Have some clean, well-crocked, shallow pans ready, containing about 1½ inch deep of good sandy peat-soil, on which place a layer of white sand about an inch in thickness. Fill the pans with the cuttings, set very close together in two or three circular rows, and leaving the centre of the pan empty. Plunge the pans under cloches or frames in a house in a bottom heat of 70°, keeping the external air excluded from the cloche or frame, and the internal air and the leaves of the cuttings constantly moist. Cuttings treated in this way will soon make good roots, when they should be repotted in small sixties and still kept under glass in heat for about 15 days, after which time they should be gradually exposed to a cooler temperature. Finally, plunge them in sand or ashes in a nearly cool frame, taking care to protect them well in severe weather. If the young plants have been repotted in good sandy peat-soil, kept free from all stagnant moisture, and not allowed to push before the ensuing spring, they will do well, and most of them will be fit for grafting in the following August. Cuttings struck in summer and autumn may also be used, but they are often liable to rot at the roots in consequence of the unfavourable winter weather which usually succeeds the operation. Be careful to leave some branches on the plants from which the cuttings are taken, otherwise they will be very likely to perish during the next winter. —D. Guiheneuf.

Cross-breeding.—An interesting and probably a very important question with regard to this matter would be, whether the ovary fertilised by foreign pollen, and enclosing the seed is, when developed into a fruit, pod, capsule, burr, &c., to be considered as a first generation of hybrid fruit, or merely as a part of the mother-plant enveloping the hybrid seed, which will next year produce the first generation of hybrid fruit? Were the subject suited to a horticultural journal one might, arguing from analogy with what takes place in the animal kingdom, bring forward many arguments in favour of the first supposition. Every now and then instances are brought forward by able botanists showing that this influence of the foreign pollen is already visible on the envelope of the hybrid seed. I am of opinion that these instances would be more numerous were they habitually looked for, and were not the idea pretty general that the plantule contained in the seed is the only part of the fruit affected by crossing, the rest being only a part of the mother-plant. Of course, probably many hundred hybrid fruits would have to be duly examined before any notable or worthy variation could be found; but what a saving of time and expense it would be if the fact could be established that the sower need only sow the pips found in a notable or worthy variety on the mother-plant, discarding all others.—Fredk. Palmer, *Versailles.*

NOTES AND QUESTIONS ON PROPAGATING.

New Plan for Double Working Pear Grafts.—The following is an American plan for double working such varieties of Pears as are difficult to graft on the Quince. The reluctant variety, whatever it may be, is taken and grafted on some other Pear—the Bartlett for instance; the latter is then cut from the parent tree and grafted on the Quince. Growth in both scions follows at once, and at least a year's time is thus gained This method is also said to improve the habits of some straggling varieties; the Seckle, for instance, double worked on the Bartlett, will grow much faster than when grafted directly on the Quince.

Cold Grafting-Wax or Mastic.—The following composition is recommended by M. Rodemackers, of Maeseyck.—Rosin, 12 oz.; hog's-lard, 2 oz.; alcohol of 30°, 2⅔ oz. Melt the rosin and hog's-lard together over a gentle fire. Take the vessel off the fire and add the alcohol as speedily as possible, and in small portions at a time, taking care to keep the mixture well stirred while doing so. Then pour it into a tin box, which should be kept well closed until required for use.

Manetti Rose Stocks.—I have fifty Manetti stocks, varying from 4 to 5 feet in height; which is the proper way to bud them? Should they be cut down or left as they are, and be budded as standards?—Anxious. [They should be cut down to about 18 inches, root and all; then planted; and at the budding season they should be worked just beneath the ground, and at the junction of the root and stem. This will necessitate taking away the soil carefully, so as not to injure the bark; for standards Manettis are useless.]

Roses from Cuttings.—I have a bed containing 4 inches of clean washed sand; the bottom is bored full of 2-inch holes, over which is spread straw, to prevent the sand from falling through. The pipe which conducts the hot water through my greenhouse is completely boxed up under the bed, which affords a strong bottom-heat, and I have sashes over the cuttings which confine the heat that arises from the sand. I keep the cuttings moist by watering with clear rain-water, at about 70° temperature. The glasses must be kept close, only occasionally raising them to give air, and thus circumstanced, Roses root freely. —T. H. H.

THE KITCHEN GARDEN.

HISTORY OF THE "ROSE" POTATOES.

BY DR. HEXAMER, NEWCASTLE, NEW YORK.

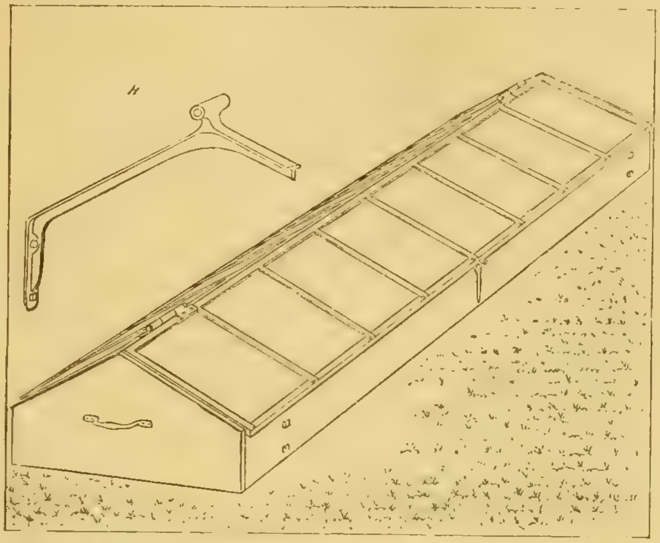
"The Early Rose" was the pioneer of this remarkable race of Potatoes. It was originated by Mr. Bresse, of Brandon, who sold his then small stock to Mr. Heffron, of Utica. Up to this time it was known as "Chili Seedling," and was exhibited under that name at several shows in the fall of 1867. Shortly afterwards Mr. Heffron sold half of his stock to Mr. Conover, of New Jersey, and the other half to Mr. Bliss, of New York, at the same time changing the name to "Early Rose." The excitement which accompanied the introduction of this Potato is fresh in the memory of Potato growers. It soon became the leading early Potato, and is as yet not excelled by any newer kind. The "Late Rose," also known as "Thorburn's Late Rose," was introduced in the spring of 1872. This differs from most other named sorts in not being a seedling or original variety, but a sport or sub-variety. It was discovered by Mr. Coe, of Washington County, who, observing that a few Vines among his "Early Rose" remained fresh and green for several months longer than the others, caused these hills to be dug separately and planted in the following spring, when they retained the characteristics shown the previous year, and their offspring have continued to do so ever since. Samples of this Potato were exhibited for the first time in 1871, at the New York State Fair in Albany, where they attracted much attention. The Late Rose differs from the Early Rose in ripening later, being more prolific, and in keeping better; in quality and appearance they are nearly alike. "Bliss's Late Rose" is identical with this one. "Campbell's Late Rose" is a seedling raised by Mr. George Campbell, of Ohio. This variety seems to vary more than others, when grown in different soils and localities. With me, on a somewhat heavy clay soil, it proved exceedingly prolific, more so than any other variety in my experimental field, but in quality it fell much behind expectations. It is very late, the shoots have a vigorous straggling growth, remaining green until killed by frost. Some of the tubers grew very large, a few over 12 inches long, but more than one-half of the crop is too small for market; the medium and large ones are irregular, knotty and scraggy, and mostly hollow in the centre. In some localities, however, it has given better satisfaction. The whole appearance of the plant and tubers reminds one of the old Merino Potato. "Young's White Rose" introduced by Mr. Young, of Wisconsin, is a large, white, heavy Potato, resembling the Harrison so much that, during three years' trial, I could not discover any difference between the two. "Wainwright's White Rose" is a seedling by Mr. George Wainwright, of Pennsylvania. In shape and size it is something like the Orono, but its skin is rougher and not as white as that of the latter. It rotted badly the past season, and has not developed any desirable qualities. "Queen of the Roses" was raised by Mr. William Minnigh, of Pennsylvania, from a seedball of the Early Rose. It is of exceedingly fine appearance, and, on the grounds of the originator, very prolific, but needs more extensive trials to determine its value. "The Whither Forest Rose" is a seedling or an old kind under a new name, I cannot tell which, but it looks exactly like the Monitor. The first sample came from Vermont. "Foster's Late Rose" is a seedling raised by Mr. Foster of Long Island, probably the first variety named "Late Rose." It was exhibited at the American Institute Fair in 1870, a year before any other "Late Rose" became known. The priority to the name would therefore belong to this variety, but, as it was never disseminated to any extent, the late variety of the Early Rose has now the right conceded to the name "Late Rose."

Fluke Potatoes.—Hearing a deal about the good quality of these, and their general freedom from disease, I was induced to make a trial of some. The first year, however, I only purchased a very small quantity. They were treated in every respect like other sets, but were so long in making their appearance above ground that I almost feared they would not come up at all, and many of them really did not grow. Those that did push gave a very fair yield, but nothing extraordinary; their quality was, however, very good. On finding this to be the case, nearly all were set aside to plant another year. They kept capitally, and with a quantity which I purchased were planted last spring, in the usual manner, with the exception of a little more manure; and, as in the preceding year, they came up badly, but greatly improved during the summer. On taking them up I was by no means disappointed, for both as regards number, size, and quality they were admirable. During the two years I have grown them they have been remarkably free from disease.—T.

GARDEN STRUCTURES.

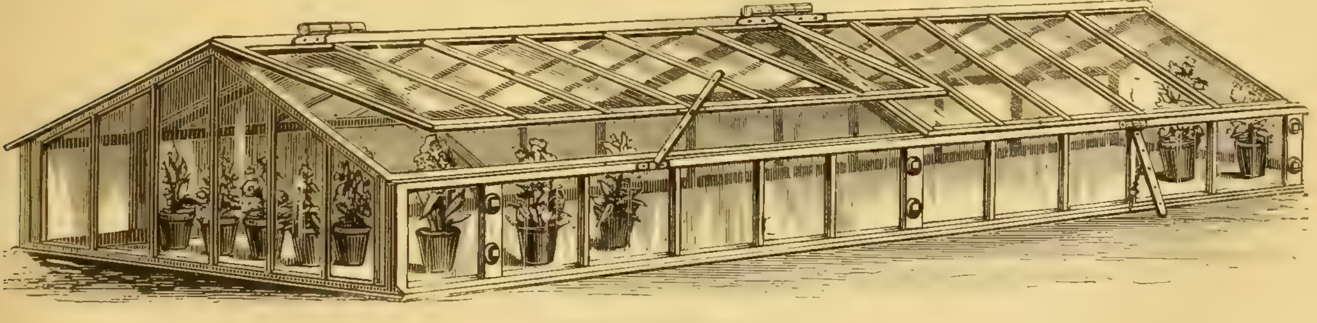
GROUND VINERIES AND PLANT PRESERVERS.

Of these we give two illustrations, both the invention of Messrs. Boulton, of Norwich. The first, a ground Vinery, obtained the only prize medal awarded for such contrivances at the Royal Horticultural Society's Show at Birmingham, last year. The second, a plant preserver, has glass sides and ends, and in that respect, as well as in some others, is an improvement on the first; inasmuch as higher sides admit more light to the inmates, be they either plants or Vines, and its neat appearance permits its being placed in positions where more unsightly objects could not be allowed to stand, but yet where something of the kind is wanted. The uses to which such contrivances may be put are well known to most of us, the greatest perhaps being the enabling us to secure crops of fruit and vegetables five or six weeks earlier than where no such assistance is given, as well as preserving them in good condition later in the season than they could otherwise be had. Every convenience is provided to save time in cases of removal, planting, watering, and giving air. A neat arrangement has also been contrived for setting open the lights for purposes of ventilation, and for securing them from being blown up or down by wind in exposed situations. The glass is firmly fixed and puttied, an essential point, preventing, as it does, all escape of warmth from within; and a great advantage belonging to such frames is, they are complete and ready for use the moment they are received. Their price, too, is so inconsiderable as to bring them within the reach of everybody.



Boulton's Ground Vinery.

Californian Flowering Plants and Shrubs.—Among the more beautiful and fragrant flowers found in California, the Lily and Syringa family are conspicuous; some of the latter forming large trees, which, when in bloom, are so completely enveloped with cone-like clusters as to suggest the presence of small white clouds resting on the verge of the horizon. These flowers, emitting the pleasant odour peculiar to their kind, fill the air for a long way around with the most delicious perfume; and although the wild flowers of California are so generally inodorous, the atmosphere, owing to their incredible numbers, and the fact that a few are highly fragrant, is fairly oppressed with the rich aroma thrown off by them in the spring and early summer.—*T. F. Cronise.*



Boulton's Plant Preserver.

PLANT ORIGIN OF COAL.

Coal, one of the most ancient remains of the primeval world, is acknowledged to be of vegetable origin, and to have been formed at a period anterior to the advent of man. Before Adam existed coal was formed. This useful mineralised vegetable production consists of four elementry bodies—carbon, hydrogen, oxygen, and nitrogen—and these produce nearly fifty other substances. In warm lakes or marshes reeds of different kinds spring up, and grow with amazing rapidity, and as readily decay, forming soil for other plants of similar habits, which in their turn die and in which the seeds of forest trees readily take root, and accumulate around them undergrowths and sand and mud always to be found in coal-beds above the clay bottoms upon which the water and decayed vegetation rests. Prof. Phillips says:—"Under each coal seam a stratum of ancient soil exists, in which there are commonly found the roots of ancient trees, while above the coal there is a layer of sandstone or shale, in which are not unfrequently found the trunks of those trees—whose roots being in the mass of decayed vegetation below the shale are found either fallen or in their original position, and are only partly converted into coal." The atmosphere in the early coal formation teemed with the deadly carbonic gas, as well as with oxygen and nitrogen; so also does the atmosphere of the swamps of the Amazons to this day, but in a less degree. And this is favourable to the growth of the reeds and other vegetation which delight to have their roots in the tepid water on the surface of the clay, that appears to be essential to the formation of coalbeds. Many generations of these plants lived and died, absorbing the water, their remains sinking deeper and deeper as time elapsed. By-and-by sand and earth drifted, or was conveyed by the wind and deposited upon the corrupting vegetation, which then became fit soil for trees that grew and flourished, their roots penetrating into the decayed undergrowths, and yet the earth encircled their trunks. Ferns, Calamites, and other similar growths sprang up, mingled also with reeds, and thus the undergrowth and decayed branches of the trees sunk down into the mass, and again one or many succeeding layers of deposit went down, till as soon as the submergence of the mass under the water was complete the late trees which had formed a forest began to decay, and sunk prostrate upon the soft matter of embryo coal. Earthquakes or other earth disturbances may have toppled rocks or other earth upon the mass, or sandy or earth particles been drifted upon it, and thus in darkness and in heat generated by damp and pressure the coal formation commenced. Forest and other large trees have contributed but little to the material of coal deposit, the source of creation of the material has been from the decaying refuse of various small plants, which never reached so far as even the branches of the trees. The fossil Floras of the coal formation in many different places are remarkably similar. In a number of specimens of coal obtained from various places trees are recognisable as having grown upon the vegetable deposit, but not as forming coal-beds, although they have in some instances been converted into coal, in others to a petrified structure of stone, in which the bark and the medullary rings of the trunk are preserved with all the characteristics peculiar to the species of trees. The various kinds of coal result from the different manner of formation and the different species of vegetation of which it is composed. Bituminous coal being the result of decayed Pine trees and others possessing similar gums, migled with gigantic Club-Mosses, Ferns, Equisetums, Cypresses, Junipers, Arborvitæs, and Calamites, grown in swamps, is undoubtedly the purest kind of coal. It kindles readily, and burns with a steady, cheerful flame, leaving a residue in cinder. Coal with wood-like texture, that burns to a white ash, originated in reeds. Alder and Hazel undergrowths, and plants without gum, long macerated in shallow waters and suddenly covered up. Coal produced from peat, Mosses, and Pine refuse long grown in swamps and sunk down without earth convulsions, but with little bitumen, is an excellent coal, though it will burn to a white ash. Where sand, stones, and shales occur in coal it shows that the vegetable matter had drifted by the combined action of wind and water, and the coal will be slaty and earthy, the lumps laminated and not easily broken. Anthracite contains but little bitumen, oxygen, or hydrogen. It is an ancient coal, from which heat and time have extracted them. Cannel, or candle coal, abounds in hydrogen, burns with a beautifully clear flame, and is the best coal for making gas.—*Warren Francis.*

ROYAL BOTANIC GARDEN, EDINBURGH.

We learn from the curator's report for 1872 that several improvements have lately been made in this garden. A house for half-hardy trees has been erected, and when the heating has been provided for by the introduction of extra pipes, the plants now crowded in a cooler annexe of the Palm-house will be transferred to it. When this is accomplished, the unseemly partition in the Palm-house will be taken down, and the two buildings for Palms will be united into one. By this means room will be given for the Palms at present in cultivation. The new half-hardy house is about 40 feet high, 50 feet in breadth from north to south, and 60 feet from east to west; it is constructed of iron, and surmounted by a dome. It is hoped that next year the cool houses on each side will be incorporated with it by taking away the partitions, and thus full scope will be given for the exhibition and study of the plants. The improvement in the museum by the formation of the glass roof has enabled visitors to see the specimens properly, and has facilitated the arrangements for lectures and demonstrations. The rock garden has been much extended. In the formation of it the stones of some of the old walls have been utilised. It is hoped that, in the course of another year, this most useful and interesting part of the garden will be completed. The Edinburgh Botanical Society have handed over to the garden their entire library. The gift has been accepted by Government, and a room has been provided for the reception of the books. This library is open to fellows of the Botanical Society, and to any visitors who wish to study the plants in the garden and herbarium. The visitors to the garden during the year have amounted to 71,394.

THE ARBORETUM.

MOVEMENT OF THE SAP.

It may perhaps be usefully suggested, that in all attempts to trace out and define the movement of the sap, it should be borne in mind that though plants, like animals, must take in, digest, and assimilate food, because, like animals, they live and grow, yet that these functions, which in the latter are performed by motions, more or less complicated, of the muscular tissue, must, in the former, as inanimate beings, be performed passively, as far as the plant is concerned. If the plant's food—water, more or less charged with nutritive particles—be taken in at the spongioles, ascend and be conveyed through the plant up to the leaves, and thence, after having had its character changed, flow through and permeate the whole system; this can only be done by such natural forces as can of themselves cause these motions in fluids in general.

The only ones applicable are, capillary attraction, by which liquids will ascend in capillary tubes; gravitation, which tends to make liquids run down; the syphon, a complex one, which will make a liquid ascend, pass a bend, and fall again; and endosmose, which will cause two liquids of different natures to exchange places, through an organic diaphragm, without the help of any openings. That there are two fluids in plants—the crude food as it comes from the earth, and the digested or true sap—cannot be doubted, as any one may ascertain for himself by tasting the real sap of the Sugar Maple, &c. It may, therefore, be reasonably surmised that there exists sufficient difference in the natures of these liquids to cause endosmose; and, indeed, it would otherwise be nearly impossible to account for the passage of the two saps in those numberless places where the continuity of capillary and other tubes ceases, and the way is blocked up by tissue. The four above-named forces could, therefore, draw in the liquid food at the roots, and convey it upwards, laterally, and downwards (as in the branches of the Weeping Willow), up to the very leaves, where, according to the received opinion—probably a very true, yet a mongrel sort of one, because it confounds food with venous blood—it is in these so-styled lungs of the plant changed into true sap; and the same forces could convey the true sap in its turn to every part of the organism. No external force can rationally be admitted to be the mover of the sap or saps, although heat is a great accelerator of them. This latter part it might perform, not only by evaporating part of the liquid from the leaves, thus making room for the new inflow, but also perhaps by directly expanding the liquid itself in the cavities of the plant. It never, however, could be the primary cause of motion in sap, which, although slackened during winter, so as to be sometimes scarcely perceptible, like the pulsations of hybernating animals during this season, yet exists nevertheless, as is proved by the evolution of roots during winter. The building up of cellular and fibrous tissue would probably come under those chemical laws or forces common to the mineral as well as to the animal kingdom and by which the atoms of a mineral solution will as unerringly build up a complicated crystal without omitting a single angle, as those of animal liquids will form bone, muscle, fat, &c.

Versailles. Fred. Palmer.

THE ARAUCARIA BIDWILLII AT KEW.

BY JOHN SMITH, EX-CURATOR.

This species of Araucaria (see p. 194) was first discovered by woodcutters, in a district of Moreton Bay (now Queensland), and a young plant of it was sent to Mr. Bidwill, then superintendent, *pro tem.*, of the Botanic Garden at Sydney. He sent the plant to this country, and it was offered for sale at Stevens', I think in 1842, the upset price being £25, but at that sum there were no bidders; consequently Mr. Stevens asked me if I would take the plant under my charge at Kew, which I did. It was then about 18 inches in height, and ultimately Mr. Bidwill made a present of it to the garden. At the time of its removal to the "Winter Garden," in 1862, it had attained a height of 12 feet, with a spread of branches of 18 feet, and a girth of stem near the base of 2 feet 6 inches. It was then a compact handsome plant, growing in a square box. Subsequently other plants of this Araucaria were received at Kew, one of which, when sent to the "Winter Garden," had attained a height of 10 feet, a spread of branches of as many feet, and a girth of stem of 1 foot 2 inches. In its native country, which lies between the 26th and 28th parallel of south latitude, it becomes a lofty tree, attaining a height of from 130 to even 170 feet, with a girth of 25 feet. The cones are of an oblong-conical form, 9 inches in length and 5 inches in diameter, or even larger; they contain more than one hundred nut-like seeds, the kernels of which are about the size of a Walnut, and form an important article of food to the natives, who, when the nuts are ripe, congregate in hundreds to feed upon them. They call them "Bunya-Bunya"; they have an Almond-like flavour, and those who eat them get fat upon them. This kind of food being of great importance to the natives, Government has issued orders that the trees are not to be cut down. Each tribe of natives has its own group of trees, and of these each family has a certain number, which is hereditary property, any trespass on which is vigorously resisted. Although Government, as I have said, has passed an Act to prevent the destruction of the trees, such forests being only ninety miles from Brisbane, and their wood being found useful for many purposes, it is feared that as the country becomes cultivated the Bunya-Bunya trees will get scarce, and that the natives, when taken up for stealing from the settlers, will say, "What can we do? you first destroyed our kangaroos, and now you have taken our Bunya-Bunya, and in time we ourselves will disappear from the land, and be replaced by civilised men."

Exotic Trees and Shrubs in Devon.—Will you kindly tell me the name of this Acacia from Australia? I believe it to be A. heterophylla, but I am not certain. It has grown out of doors in my shrubbery for many years, along with Sikkim, Neilgherry, and Nepaul Rhododendrons, Olea ilicifolia, a species of Eurybia, Ozothamnus rosmarinifolius, Fagus antarctica (or Cunninghamii, I am not certain which), Cerasus ilicifolia, which makes a rambling straggling shrub, Dracæna indivisa, the Huon Pine (Dacrydium Franklini), the Desfontainea spinosa and the Celery-topped Pine, from Mount Egmont, New Zealand, a kind with very marked peculiar foliage, something like that of Asplenium Trichomanes, and with very upright growth. The different varieties of Azalea indica do well in the same shrubbery, and Rhododendron fulgens and Hodgsonii are just showing flower, and will, I hope, be out in another fortnight; but though Rhododendron Wightii has grown for ten years it has not yet shown a single blossom, though very healthy in foliage.—THE COLONEL, *Tiverton, Devon.* [The specimen is too imperfect to name with certainty; kindly send us a piece when in flower, or when the leaves are more fully developed.]

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE COLUMBIA MOCK ORANGE (PHILADELPHUS GORDONIANUS).

THIS forms a many-stemmed vigorous-growing deciduous shrub, which attains a height of from 8 to 10 feet. Its principal stems are more or less ascending; the branchlets are slender and somewhat pendulous, and when a certain amount of size has been attained a number of strong shoots of a whitish colour are annually produced from the base. It is a native of the north-west coast of America, where it grows in the shape of underwood along the banks of the Columbia River. It is also found in Upper California, in shady woods along the Sacramento River. In this country it grows freely in any common garden soil, and it is readily increased either by seeds, which are ripe in October, or by means of cuttings of the half-ripened shoots in August. It was first introduced in 1826. The leaves (see p. 234), are somewhat small, ovate, pointed, coarsely toothed on the edges, three to five nerved, and produced on short footstalks; when in the adult state they are smooth and bright green above and hirsute beneath. The flowers are large, pure white, and scentless, and are produced in great profusion in terminal compact racemes, of from five to nine flowers each, in the end of July. The fruit or capsule, which is ripe in October, is comparatively large and semi-superior, with a large, broad, spreading calyx attached to it. This species of Mock Orange is one of the finest and most showy of the genus, and it deserves a place in every collection of shrubs, however limited, on account of its producing its flowers in great profusion, and at a season when nearly all other shrubs have done blooming. It is sometimes misnamed Philadelphus californicus. The length of a full-sized leaf is 3 inches, including the footstalk, which is not more than half an inch long, and the breadth is 2 inches.

The Columbia Mock Orange.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—Stir the soil occasionally amongst spring-blooming plants, and if slugs are troublesome scatter some air-slaked lime around the outsides of the beds in which they are growing. Edgings of Stachys lanata, Cerastiums, variegated Thyme, Gnaphalium lanatum, variegated Arabis, variegated Queen of the Meadow, Aucuba-leaved Daisies, crimson-leaved Ajuga, the dwarf Campanulas, Santolinas, and a few other compact-growing plants, may now be lifted, divided, and transplanted. Two-year-old edgings are generally better than one, so that unless they exceed that age, they are better left undisturbed. The variegated Polemonium cæruleum makes one of our finest hardy edgings; the best way of treating it is to lift the roots and pot them in October or November, to keep them during the winter in a frame or cool Peach-house, and to transplant them in spring when they begin to grow. Transplant from frames, greenhouses, or pits into beds in the flower garden, Pinks and Carnations wintered in pots, or autumn layers planted in light soil in frames in winter. Bulbs of Lilies yet in store should be planted as speedily as possible. Pansies and other spring blooming plants may yet be transplanted as occasion requires; indeed, few plants are more useful at any season than Pansies. Gladioli for blooming in beds or shrubbery borders may be planted at once 3 or 4 inches deep, and a sprinkling of sand should be strewed under and over the bulbs. It is a prevalent idea that Gladioli should not be transplanted till April for fear of spring frosts; but that is too late unless the plants are required for late flowering. Sow Mignonette where it is required to bloom, and hardy annuals not sown last September here and there in beds or borders for transplanting. Sow also a good stock of Sweet Peas, Nasturtiums, Tropæolums, and Scarlet Runners, either where they are to bloom or in sheltered beds or corners for transplanting hereafter to their permanent quarters. Autumn-saved roots of Scarlet Runners throw up shoots freely, and bloom earlier than seedlings; the roots require treatment similar to that usually given to Dahlias. Divide and transplant roots of herbaceous plants of various sorts.

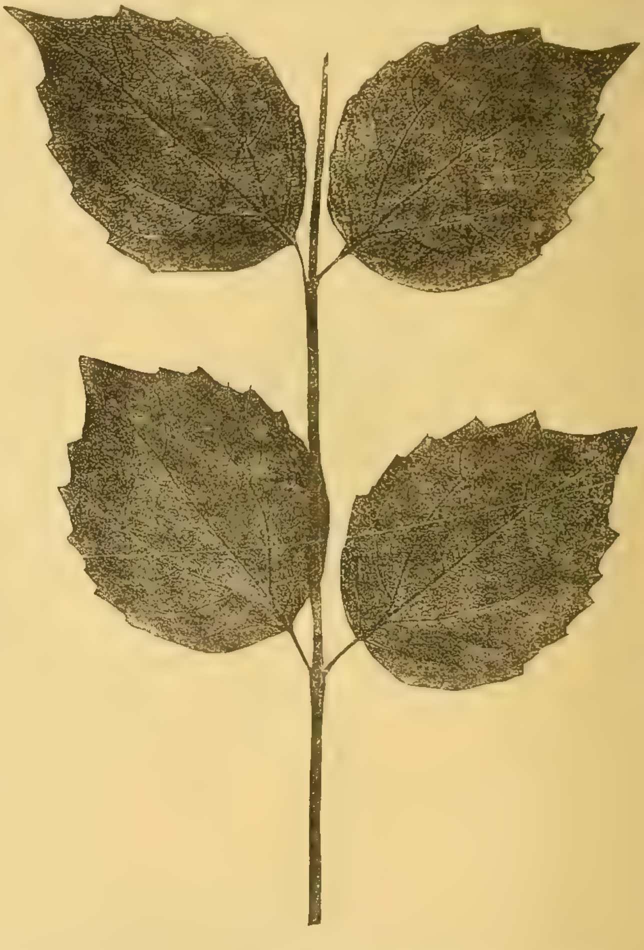
Lawns.—If worm-casts are prevalent on these prepare some lime water, mixing therein some soot and salt, and water the lawn with the mixture through a rough rose; this not only gets rid of the worms but invigorates the Grass. Pieces of ground about to be converted into lawns should be turfed at once, or if turf cannot be obtained, they should be thickly sown down with Grass seeds. Hollows or other irregularities should be made level at once. In such operations the turf should be carefully skinned off and used again, for in no case should patches of new Grass be visible on permanent lawns; the more prominent portions of lawns will have been already mown this season, but now the whole of the Grass-surface should be cut. It should first be gone over with a wooden-toothed rake, and Beech nuts, small stones, and other things detrimental to the scythe or mowing machine should be removed by means of a daisy rake or a birch-broom. After that well roll the Grass previous to mowing. Plantains, Dandelions, Daisies, and similar plants the riddance of which from lawns is a desideratum, may now be eradicated. If Moss prevails amongst the Grass, rake the roughest of it off, and apply a dressing of sifted rich soil over the whole surface, which will so stimulate the Grass as to make it choke the Moss.

Shrubberies.—The transplanting of Evergreen trees and shrubs may yet be safely performed; indeed, vegetation is so backward this spring that even deciduous trees and shrubs may yet be safely removed. The pruning of the latter, as well as of Evergreens, should be finished at once, if not already done. Shrubbery borders should be lightly pointed over, taking care not to injure the roots in the operation, or to disturb any bulbous plants that may be growing amongst the shrubs. Isolated specimens of newly planted trees, especially if large, are much benefited by a few shrubs being planted around them for a year or two to act as a protection from wind, frost, and drought; after they get established the nurses may be removed. Roses of all kinds should now be pruned, and those on pillars or walls thinned and fastened in. Prune, where necessary, Ivies on walls, and fasten any in danger of falling away from them. Uncover Myrtles, Magnolias, Fremontias, Stauntonias, Clematises, and other half-hardy plants on walls, and otherwise put them in order for the summer.

Bedding Plants.—From greenhouses and other plant and fruit houses it may now be necessary to remove Pelargoniums into frames, in which they will keep perfectly well until bedding-out time. By keeping them in warm quarters, however, better supplies of cuttings are obtained. Proceed with the propagation of different subjects from seeds, cuttings, or divisions, as speedily as possible; for the stronger the plants are before they are planted out the better will they flower. Prick off from the seed-pans into other pans or boxes Lobelias, Wigandias, Petunias, Golden Feverfew, French and African Marigolds, Amarantuses, Brachycome, &c. Sow some crimson-leaved Beet, for flower garden purposes, in a very gentle heat or close pit. Pot off cuttings of all sorts as they become rooted; and after they have yielded up their tops for cuttings they may be placed in a position a little cooler than the propagating pit, unless a further supply is required. Repot autumn propagated Pelargoniums, and place them in a close pit or frame for a time. Give them plenty of water, but do not allow them to be saturated so much as to generate damp. Prick into boxes of light soil, seedlings and leaf-cuttings of succulents, and keep them in a position near the glass. Put into frames six or eight inches in depth of light soil; pack it firmly and into it transplant the autumn cuttings of Verbenas, Ageratums, Lobelias, Calceolarias, Salvias, &c.; from such a position they transplant with excellent roots. Similar frames are also extremely useful for Dahlias, for the roots, after being divided, may be planted in them, six inches apart, or the roots may be started in a propagating pit or frame, and transplanted to these cold frames. Sweet Peas sown in pots and boxes should be removed to cold frames after they have germinated. Stocks, Asters, Marigolds, &c., may be sown in very gentle hot-beds, that are ventilated a little day and night, and shaded from sun, for after the plants have appeared they are extremely susceptible of damp. When large enough for being pricked out singly, prepare another frame in the same way for them, prick them thereon, shade well for a few days, and eventually completely expose them, but replace the sashes in showery weather or at night, when they may be tilted up. Instead of transplanting the Stocks and Asters in frames, a wall border with a south aspect will do equally well if a few sprigs of broom or Evergreen branches are stuck in front of them; indeed, seed of these plants may be sown out of doors in April with satisfactory results.

Frames.—Where bedding plants are largely grown these must be extensively used, but the frames are not of so much importance as the protecting material. In all cases the bottom should be dry, or at least incapable of retaining any considerable amount of moisture. The sides may be of turf, bricks, or wood, with rafters or transverse bars for the support of sashes, or for bearing up longitudinal spars or boards, to support mats, canvas, or other covering. Under all circumstances sashes are the best and most convenient, and these should be drip-proof, and cleanly washed. The material on which the plants stand inside may be sifted coal-ashes, clean gravel, or wood; or a hard bottom, such as a walk, may be covered with 6 or 8 inches of light mould, into which dwarf growing, fibrous-rooted plants may be transplanted six weeks or so prior to being bedded out, after which the soil may be cast out, and a layer of ashes placed in the bottom for the reception of Fuchsias, Cinerarias, and other greenhouse plants. Where frames are the only receptacles for bedding plants, the exclusion of frost is often indifferently effected, fire-heat when used being sometimes of a parching character next the pipes, and only moderate at the other extreme, and coverings necessitate a long period of darkness just when the plants are most liable to damp off, and the atmosphere least drying. An excellent means of obviating so much darkness and damping, and at the same time of preserving the plants in health, is practised by Mr. Cannell, of Woolwich, who, with two rows of 1 inch pipe, run along the inside of the rafters of narrow frames, and three rows in the case of wide frames, manages to have the whole interior atmosphere equally heated, and the greatest winter enemy of soft-wooded plants—damp, kept in abeyance. These pipes can easily be heated from any adjoining boiler, or by means of one purposely set for the frames, if the latter are extensive.

Orchids.—Last month and the present one constitute the recognised season for repotting Orchids; it is, however, almost impossible to adhere strictly to this rule, other departments requiring so much attention at this busy time of the year; Orchid-potting and overhauling are, therefore, for the most part, done in winter. For such as are quite dormant, winter potting is quite applicable, provided the plants are kept dry after the operation until required to start into growth. Lælias, Cattleyas, Angræcums, &c., also Oncidiums on blocks, and others, may be safely treated in this way; whereas terrestrial Orchids, such as Phajus, Miltonias, Calanthes, Sobralias, Bletias, &c., should be shifted just as they begin to grow. Now, when all Orchids are in a growing state, a moist atmosphere and a gradually-increasing temperature should be maintained. Sprinkle water on the paths, walls, and stages, and keep a supply in the evaporating troughs. Syringe the plants daily, in time to permit the foliage to get dry before nightfall. Take care that plants on blocks are not hung up immediately over pot-plants, as the drip from them injures the leaves of the latter. See to the eradication of insects, such as green-fly, thrips, scale, &c., by fumigating or washing with water in which some some soft soap and Gishurst's compound have been mixed. Let traps for cockroaches, in the form of jam-dishes with some treacle and water in them, be set amongst the plants, so that, when these pests fall into them, they may get drowned. Phosphorus paste also kills them. Ants may be trapped by means of sponges steeped in sugar and water, or in other sweet substances, placed here and there amongst the pots. Ants congregate on them in thousands, when they may be destroyed by plunging the sponge into boiling water. After the water cools, wring out the sponges, resteep them in the sweet matter, and place them again amongst the pots. Fresh bones, especially if hollow, form excellent traps for ants, which should be thrown into boiling water every morning, as in the case of the sponges. Trap wire-worms with cut Potatoes, and woodlice by means of little pots containing dry moss.



Shoot of Philadelphus Gordonianus, showing the true shape of the leaves. (See page 233.)

Hardy Fruit Trees.—Pruning and planting should now be completed, and any training yet undone should also be finished. Espaliers requiring new stakes should have them supplied at once. Any trees loosened from walls for the purpose of "pointing" the latter *i.e.*, filling up holes between the bricks caused by repeated nailing, should be fastened to them again, for the buds are now swelling fast. Fruit trees, however, are not nearly so forward as it was anticipated some two months ago they would be. If not already done, however, no time should now be lost in affording protection to Apricots, Peaches, and Plums on walls. If Strawberry plantations require increasing they should now receive attention. Old plantations of them, if not already done, should be mulched, which will both feed the plants and keep the fruit clean.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

THE TWEEDSIDE VINEYARD.

From Carlisle to Clovenford, which is near Galashiels, one seems travelling along a channel furrowed through a petrified sea. At some points the rounded hills advance on either side, as if about to embrace each other across the line. At others they recede to greater distances, opening up vistas, valleys, or streams, or revealing a far-reaching panorama of rolling hills, rising one above another until lost in the rain-clouds, or the debateable land of misty shadows that seem ever to hover over, or enshroud them as with a blue mantle. Hardly a sound is heard beyond that of some mountain stream here and there rushing down its rocky bed. And so we travel on and on, through moorland clothed with brown heath and shaggy woods, or through green hills, until we catch glimpses of the classic waters of the Ettrick, the Yarrow, and the Tweed. And then suddenly the last rays of the setting sun are thrown back in one's face, like a shower of diamonds, from a series of huge glass houses, placed in a niche at the base of the hills. "That," exclaimed a fellow traveller, "is Mr. Thomson's great vineyard."

The site of this vineyard, though seemingly too exposed, is admirable. It is sheltered on all sides, the wind being shut out by surrounding hills. The natural soil—the washings for generations from the hill sides, is an admirable rich, mellow loam, capable of growing Pines and Vines in perfection in its natural state. The vineyard is within a stone's throw of the Clovenford station, which links it to all the great markets in the country. Coal is cheap in Mr. Thomson's locality, and water is inexhaustible, and carries itself to where it is wanted. Any amount, indeed, of pure water can be run over the Vine borders by simply turning a tap and moving a hose. This represents a saving of labour that can hardly be over-estimated. The chief expenses, in fact, are in labour and fuel, and both are economised to the utmost. By building the vineyard in a block of three houses, each 200 feet long, connected at the end by means of a cross-house, that forms, as it were, an entrance hall or corridor to the others, each shelters and to some extent warms the rest. The ventilation is so perfect that either side or roof can be opened from end to end by a few turns of a crank. The heating is managed on the best principles, the amount of oxygen admitted to the furnaces being regulated to a nicety, so as to control combustion in such a manner as to get a maximum of heat from a minimum of fuel; time-saving expedients, too, are numerous. Quick growth is no longer held as synonymous with weakness. On the contrary, in Pine and Grape growing, especially, the faster the growth the stronger, heavier, and richer the produce. Skill must, however, keep abreast of speed, and when that is properly applied, it is astonishing how soon plants can be grown into produce—money. For instance, Pine-apples are now ripened in from twelve to fifteen months from rootless suckers. Old stems are forced to produce marshalled hosts of fine plants; small plants are made to bulk out into sturdy fruiting ones. Instead of the old system of disrooting and checking growth, Pines have now no rest until they ripen fruit. A few plants now and then may refuse to "show" at the right moment, and in that case they are simply cut over at the neck, and brought to earth afresh. This radical treatment never fails to send the fruit quickly up, and, properly treated, such plants ripen their fruit well. It is seldom, however, that such measures are needed. The strength of the plants from the first seems concentrated in their necks. Broad, sturdy leaves and stems throw up and finish off perfect fruit.

As another illustration of speedy culture, I would advert to the Duke of Buccleuch Grape. When at the vineyard last September, I hardly think that Mr. Thomson had a single plant of this kind in pots, for he had planted two houses with it, which had pretty well absorbed his stock. Yet now he seems to have plenty of it. The fact is, every eye is converted into a plant. Neither is time thus gained by an extra amount of bottom-heat; on the contrary, his pot Vines, as soon as fairly rooted, are grown on the cool floor of the houses. They are arranged in lines and arches, and have a charming effect. Early Vines for forcing had completed their growth when I saw them last September, and were resting behind north walls. A large trade is done in these for early work, the first crop paying for the plants many times over. But the mode of furnishing the houses is the most striking example of the saving of time in the art of production. The Vines were only planted in 1870, and in 1872 the Vineries were full of Grapes. This was accomplished by beginning with Vines raised from eyes of extraordinary strength, and by planting two sets of plants in each house, one inside to cover the tops, and the other at the bottom of the rafter, with a choice of two borders, outside and in, for the roots. The lower plants are the permanent Vines, and the higher ones the supernumeraries for fruiting at once, and for being cut out when the others are strong enough to occupy the whole area. Between the two sets the Vineries are almost fully furnished, and carried about 10,000 lbs. of fine fruit last year. Nevertheless, wood, leaf, and buds alike looked as if they liked it, and were ready to multiply the yield in any ratio this season.

The chief vineyard, as already stated, consists of a block of three houses each 200 feet long, 24 feet wide, and about 15 feet high, covering a space with their intermediate borders about 130 feet wide. This is occupied at one end with a fourth vinery running at right angles with the others. This transverse house is of the same width and height as the others. What are these Grapes of a bright golden hue which I see yonder—enormous both as regards size of bunch and berry? "That's the Duke," said Mr. Thomson, and he gave me a bunch to carry home with me. All went well with my much prized present till I reached Peebles. At that station there was a rush of passengers and a sudden change of position. In an instant there was an abundant flow of juice. Had the waste steam-pipe been turned on under my seat? Not at all. I had only sat upon the Duke! This fine Grape is not fleshy. Oh no! I wished just then it had been; and it has no Muscat flavour, both high recommendations to my mind. It has, however, a sparkling refreshing flavour of its own, more closely related to an exquisite Sweetwater than a Muscat. In short, in appearance and also in flavour it is more like the Golden Champion in a perfect state than any other Grape with which I can compare it. But here is the difference. We seldom see the Golden Champion perfect. It spots as a rule, at least it has done so hitherto. What the Hamburgh is among black Grapes the Duke of Buccleuch is likely to become among white ones. It is no rival to the Muscat, but it will probably supersede other white kinds of Grapes. Planted at the same time as Hamburghs it ripens fully a month or six weeks before them, and in this respect it resembles the fine old Buckland Sweetwater. The bunches average from $2\frac{1}{2}$ to $3\frac{1}{2}$ lbs. in weight, and the berries are the largest of any Grape with which I am acquainted. Mr. Thomson has furnished two of his vineries with it, and it commands nearly double the price of other sorts in the market.

The Duke of Buccleuch also keeps well. Grapes of it ripe in July continued sound till October, and this is long enough for any white Grape to hang, unless, perhaps, it be the Muscat or white Lady Downes. Time and space would fail to notice all the other houses, furnished in their proper season, from wall-plate to sharp roof apex, with a steep slope of Grapes almost rubbing each other. The vineries are clear of other inmates, affording full view from end to end; and the sight is worth going miles to see. Besides the Duke, there are Hamburghs, Lady Downes, Alicantes, Muscats, Gros Colman, and others. All the vineries are exactly of the same character—wide, high, and roomy, as well as long. With the exception of the Duke, they are all intended for late crops. Their form is admirable for keeping the fruit, as was found this unprecedentedly wet winter. With the air swept in over the hot-water pipes at the bottom, and rushing out at the ventilators on the crown of the roof, no drop of water or condensed vapour can rest on leaf or berry. The position of the ventilators at the summit of the narrow ridge also prevents the possibility of scorching. In a word, the vineries are admirably suited for the purposes to which they are put. The Vines, as has been stated, were raised from eyes, which are either rooted on square pieces of turf or in pots, and planted out in a prepared bed, until established. When about 2 feet high, each is cut out with a block of roots about 6 inches square, and transferred to the fruiting pots, or planted out, as the case may be. The borders are simply raised a little above the natural level, which is nearly that of the water, and are formed with the natural soil, enriched with a few inch bones. The houses, though good, have nothing in themselves to command success. What we see at the Tweedside vineyard is the result of skilful culture.

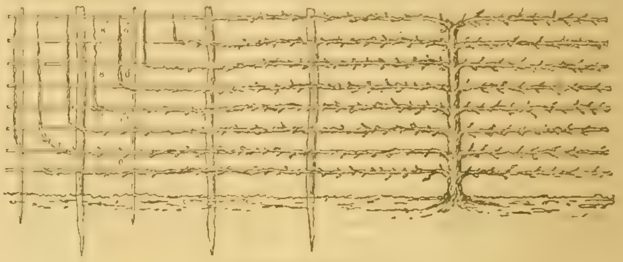
The pot Vines, from their vigour and numbers, are as marvellous in their way as those planted out. Thousands of them are raised and prepared for fruiting annually. Many of these Vines are purchased to fruit but once. The strongest of these will carry an average of from six to eight bunches, and if ripened in April or May they are very valuable.

About 500 feet of quarter span-roofed houses, 16 feet wide, and 200 feet of pits, 7 feet wide, are devoted to the fruiting and growing of Pine plants for sale. In September last the Pine houses were being enlarged. Mr. Thomson intends to fruit from 900 to 1,000 annually when he gets into full swing, ripening most of them in winter and early spring, when they bring the highest prices in the markets. In the autumn the imported fruit, though worthless compared with English-grown Pines, nevertheless bring down the prices, and render Pine growing unprofitable. They are Pines, and that sufficeth for many. Mr. Thomson is, therefore, devoting his attention chiefly to that finest of all winter Pines, the smooth-leaved Cayenne. He also grows quantities of Queens, Charlotte Rothschild, Black Prince, Montserrats, and Prince Albert, the latter a new Pine, of which Mr. Thomson and his brother, at Drumlanrig, think very highly. Nothing could exceed the health and cleanliness of the stock of plants. They are without spot, and have that look of well-doing, so difficult to put in words, and so easily seen, that satisfies growers at a glance. No one could desire to handle finer Pine plants.

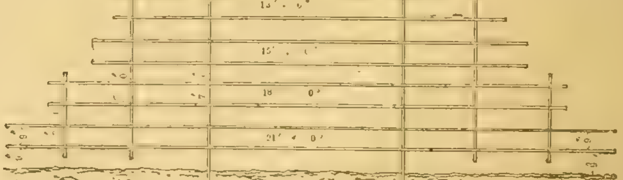
The sight of such fine Vines, and Grapes, and Pines is something never to be forgotten, but more pleasant still is the memory of the walk by moonlight to Ashiestiel, the simple home-like hospitality and the linking of the gentle art of horticulture to the nobler guild of literature throughout the evening's friendly fellowship. D. T. Fish.

FRUIT-TREE TRELLISES.

That iron is a better material than wood for training fruit-trees there cannot be a doubt. Its advantages are, that it is more durable than wood, and if galvanized requires no paint; it does not harbour insects, and its bulk can be reduced to a minimum. Therefore let those who have it already, or who can afford to purchase it at its present cost, be thankful—in the former case, that they have it; in the latter, that they can have it if they like. But for those to whom the expense of iron is an objection, I recommend a plan that I have followed for many years, and by which any man who has a carpenter's shop on his premises, and a pair of hands to work in it, can complete in wet weather all that is wanted for his trees that are to be trained as espaliers. The mode of proceeding is as follows: Procure from the nearest timber yard a few hundred feet of the lath used for fixing blue slates, $1\frac{1}{2}$ inch by $\frac{3}{4}$ inch. Plane their four sides, and then make two rods out of each by a saw-cut down the middle. Each lath will give you two rods 21 feet long, and about five-eighths of an inch square, and they can be finished by planing the fourth side of each rod. With these construct your trellises, using $1\frac{1}{2}$ inch flat-headed nails where the rods cross each other. Do not notch them at the junctions, as that process not only weakens them, but takes up a needless amount of time and trouble. Even without paint they will last many years, if a little of that material is applied between the joints and on the heads and turned points of the nails. If the wood is well seasoned it can be painted at once, but if there is fear that it is not thoroughly dry it had better stand a year before it is painted. The quickest way to paint the trellises is to give each rod one or two coats of paint before they are nailed together, and a third coat afterwards; but previously touching with paint the heads and points of the nails, as directed before. These trellises can be made in any form that may be preferred. My practice is to make them of various sizes to suit the ages and dimensions of the espaliers. And here will be noticed one advantage that wood has over iron. Trellises so constructed can be shifted with ease from one situation to another, and their dimensions adapted to early or late training. When a tree has outgrown one trellis, a larger one will take its place, and it will be at liberty to be used for a tree of earlier growth; whereas, the usual arrangement with iron is to stretch wires along the sides of the walk, where the trees have been or are yet to be planted, to set up at once the entire structure, not half of which will be occupied for many years, perhaps not until the iron begins to show here and there through the coating of zinc that protects it. With wooden trellises each tree can have just that amount of support that it requires for one or two years, and your various forms come in usefully at every addition you make to your stock of trees. Another advantage that may be stated in favour of these wooden trellises is that they can at any time be taken to pieces, their length reduced, and their form and proportions altered; and it is therefore desirable in putting them together not to clench the nails thoroughly, but only to turn their points in such a manner that they can easily be broken off, and the nails drawn and removed. The cost of such trellises as are here recommended may be estimated by a description of one that is suitable to a tree whose branches run on either side rather more than half-way into the allotted space. Four 21-feet laths will each make two rods of the same length. From the ends of two of these rods cut off 3 feet. From the ends of two more cut off 6 feet, from the third pair cut off 7 feet 6 inches, and let the fourth pair remain the full length. These short lengths will make the uprights, and the longer must be nailed to them lengthwise, placing the shortest at the top and the longest next the ground, and about 9 inches from each to each. The 3 feet lengths should be nailed near the ends of the third and fourth rods, the 6 feet lengths at about $2\frac{1}{2}$ feet from the latter towards the stem of the tree, and the 7 feet 6 inches $2\frac{1}{2}$ feet nearer. The tops of the six uprights should rise about an inch above the highest rod, and it will be found that the two longest uprights will extend a little over 2 feet beyond the lowest rod. These two are intended to go into the ground about a foot, to steady the trellis, and keep it in its place, its real support depending on two strong stakes driven into the ground near the ends of the top rod, the trellis standing sandwich fashion between them and the tree, and the trellis itself being secured to the stakes with fastenings of copper wire. Now, if we reckon the expense of such a structure by the value of the materials used, we shall find that the cost cannot much exceed 1s. 6d. The lath can be got for 2s. or 2s. 3d. the 100 feet, the stakes at 1s.

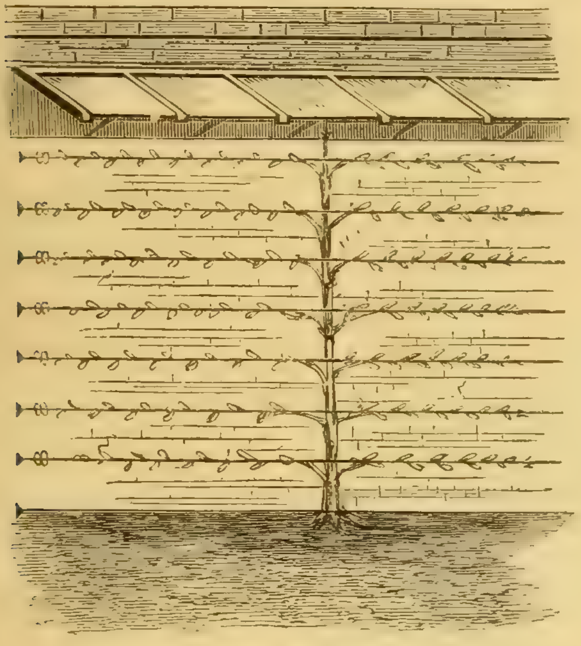


Espalier Trellis.



Mode of forming Espalier Trellis.

the score, and nails, paint, and copper wire for about 3d. When the trees get beyond the constraint of such a trellis as this, they are just as well without any more support than a few good stakes here and there, and a trellis only at each end of the tree, the pair costing no more than the one just described. The two uprights that go into the ground will require renewal every five or six years; how long the rest will last must, I suppose, depend in some measure on the quality of the wood—mine show no signs of decay at present. When the top branches of an espalier have grown to their full extent, they require no longitudinal support anywhere but at their extremities. Even wire ceases to be of any use; and as for wooden rods, they are only in the way of the blossoms and fruit. As regards the height of espaliers above the ground, that must depend in some degree upon the locality and the object of the grower. If he wishes his trees not to obstruct the rays of the sun from reaching his crops of vegetables, the old-fashioned 5 feet is certainly the best; and my experience does not agree with that of one of your correspondents, that Pears will not do well on such trees. For southern aspects, with a walk along the north side, 6 feet is a good height; but for trees whose branches do not run east and west, 5 feet or a little more answers very well, and does not cast an inconveniently deep shadow. In the early growth of espaliers great care should be taken to keep the lower branch well in advance of the one above it—a foot would not be too much. Especially look after the top and bottom branches, keeping the latter a good 14 inches from the level of the ground, and being very careful to protect their leading shoots, and allowing a few laterals to remain on longer than on other parts of the tree, with a view to encourage the sap to flow into that part of the tree which, under ordinary circumstances, it would be likely to desert. But with the upper tier the reverse of this practice must be adhered to, to prevent the formation of a "tête de saule," by which trees trained horizontally are so often disfigured. A modification of that beautiful form recommended by Du Breuil, called the palmette, will be found to facilitate these objects, and to keep every part of the tree in a bearing state; but the two leaders of a tree that has filled its allotted space, or is advancing towards that condition, will require constant and careful thinning, and should be the first to have their shoots shortened at the summer pruning.



Parham's Wall Coping.

In putting the trellises together, it might be found of advantage to increase the space between the rods downwards, by giving them an interval of 8½ inches at top and ending with 10 inches. By this arrangement the thicker branches would be more likely to receive their proper share of air and sun. Equal parts, or nearly so, of red-lead, white-lead, and black paint will be found a good mixture for covering the trellises, varying the proportions according to taste. B. S.

PARHAM'S WALL COPINGS.

Just now, as the fruit trees on many walls are suffering from the want of a little protection from frost and sleet, we may appropriately call attention to one of the best and simplest contrivances for guarding against these evils—Parham's glass copings, which we first noticed at the Birmingham Show. This coping is made in 6 feet lengths (except the end lengths, which are 3 feet), and is generally made 2 feet deep, or for high walls 3 feet deep. It is fixed to the wall by screws into wooden plugs or wall plates under the stone coping, and is steadied by iron stays reaching from the front bars to the wall, at every junction of the lengths. The framework of the coping consists of wrought iron channelled rafters 2 feet apart, strongly riveted into iron front and back bars, the front bars cranked for joining at ends of each length. On these rafters the glass rests in squares about 1 foot deep by 2 feet wide, two squares to each panel, and is kept in place by light iron cover plates, secured by two screw pins with brass nuts to each rafter. To remove the glass it is only necessary to unscrew the brass nuts, and if it is desired to take down the iron framing it can be readily done by drawing the screw attaching it to the wall. We have heard a good account of this simple coping wherever it has been employed. Mr. Parham informs us that his correspondents say that last year they had little or no wall fruit, except where protected by these copings, which fully bears out what was said of copings in the "Parks and Gardens of Paris." For high walls a wide coping, say three feet, is better than the narrower one at two feet. It is easy to suspend canvas or netting from the outer edge of the coping to the ground and Mr. Parham provides for this when desired; but given a good glass coping 2 or 3 feet deep, and further protection we believe to be needless.

Easter Beurre Pears in America.—In the last issue of our excellent contemporary, the *Albany Cultivator*, we find the following:—The editor of the London Garden says:—"We have just tasted Easter Beurré Pears that have come all the way from California, and they are decidedly superior to either English or French fruit of the same kind, the flavour being very fine, and the flesh of a more even and tender texture than that of European grown Pears." We have received many specimens of the Easter Beurré from California, in perfect condition, which ripened in first-rate order. They were very large, about 4½ or 5 inches in diameter, and weighed each from a pound and a quarter to a pound and a half. The flavour was not equal to that of the specimens raised in this State. Are we, therefore, to infer that our Easter Beurrés are better than those of English or French growth?

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

L'Homme Lefort's Grafting Wax.—I have received a tin of this wax with a rather loosely fitting lid; consequently the wax is stiffer than it ought to be, and of course not so easy to work. Can you tell me of anything that will soften it, and make it usable?—N. H. Pownall. [Heat is the only thing likely to soften it.]

Pears for Espaliers.—Will you or some of your readers kindly tell me what are the best Pears to plant against espaliers?—Alpha. [Take Louise Bonne of Jersey, Marie Louise, Winter Nelis, Doyenné du Comice, Thompson's, Easte Beurré, Beurré d'Amanlis, Seckle, Beurré Sterkmans, Passe Colmar, Knight's Monarch, and Josephine de Malines.]

The Sweet-and-Sour Apple.—There is a well-known Apple in America, which in some parts is less sour than in others, and which is known as the Sweet-and-Sour. Various theories have been put forward to account for this phenomenon. The matter is now, however, set at rest by a New York evening paper, which says:—"It has been supposed sap-tubes running side by side from the roots of the tree, pour their secretions on the two sides of the fruit, which present a sort of Siamese connection, although they are really two distinct Apples—a sweet and a sour one—in juxta-position." Who shall venture to speak lightly of newspaper science after this?

The Mexico Apple.—American papers speak in high terms of this new Apple. The *Agriculturist* says that it "is the best Apple of its season. The tree is hardy, a good grower, and, on good soil, very productive. The fruit is of medium size, round, regular; surface bright crimson red, with darker stripes; dots, numerous, yellow-green. The basin is shallow, regular; eye medium, closed. Cavity acute, regular; stem long or medium, slender. Core large, open, meeting the eye. The flesh white, tender, fine grained, and juicy. Flavour, subacid. Quality, best; season, August and September. A superb dessert Apple; worthy of a place in any collection, however small." Such an opinion from such an authority should lead to its trial in this country.

THE KITCHEN GARDEN.

RENOVATING A KITCHEN GARDEN.

That soils in kitchen gardens get worn out is a fact proved by experience; and, although your correspondent "J. T." may have taken the best mode of renovating them in his particular case, let him bear in mind that his plan is not suitable everywhere, unless the operator is thoroughly satisfied as to the drainage. The garden in which I am employed was renovated about twenty years ago by means of two feet of fresh soil being applied to it—an act of generosity on the part of the then owner (who did it to give bread to a number of villagers that would otherwise have starved)—and the result is that the present proprietor has nothing but barren trees and a water-logged garden. Having ascertained that, after being here a short time I recommended the removal of the old trees after the manner of your correspondent; but there being no family, I was told distinctly that no expense was to be incurred on account of the garden farther than what was necessary. Not being content that all the time expended in pruning, nailing, &c., should be spent in vain, I resolved on lifting the roots; but judge my surprise when, going out the morning after commencing operations, I found the trench nearly full of water, which took ten days to subside. Defeated for the time, but not disheartened, I have continued to effect a little improvement ever since. I have trenched the ground two, and in some parts three spits deep, the manure in all cases being put in the bottom. I do what I call my deep trenching in October, if possible. In regard to the subsoil, it must come to the surface. I have turned up some that would almost chill your correspondent to look at. Directly the new year is past, time and weather permitting, I put as much short manure on it as can be spared, and all the gas lime collected for twelve months I dig into it. It is again pointed over before it is cropped. The first crop, in all cases, has been Potatoes, of which I have always had an excellent crop, and very little disease. The half-rotted manure put in the bottom of the trench I never allow to lose any of its properties by over-fermentation, and hence its adaptation to the growth of vegetables, by what I call the "expedition treatment" (see p. 531, Vol. II.), which follows the year after, and every year there is as much as possible done on the same principle, in all cases using stable manure. As for what is called plain digging, *i. e.*, one spit, it would be of no use here, if it is possible at all to give it two. Our vegetables are as good as any in the district; our Peas (Veitch's Perfection) were only three days finished before "J. T.'s." Your correspondent says, "in many cases fresh soil would be preferable to dung itself, which may have been applied year after year to the same ground for several generations;" but it is not everywhere soil can be got for such a purpose. Gentlemen are in general too fond of their farms and parks to allow gardeners that privilege. Caledonicus.

AMERICAN POTATOES IN ENGLAND.

Taking these Potatoes as a whole, they are neither better nor worse than many of our own kind, as regards the matter of cropping, and certainly inferior to our best sorts with respect to eating quality. As to their power to resist disease, an average of results as to immunity or otherwise, shows without doubt that a majority of the American kinds have suffered less than a majority of English sorts have; but, as our kinds are higher bred and of improved quality, the reason that they suffer most is at once manifest. Still, it must be acknowledged that in thus possessing kinds (although of foreign introduction) that are of such comparatively healthy stocks, our gain has been considerable; and when the crops of certain favourite sorts run short, we are glad to have others to fall back upon. The most prominent kinds have been and still are a particular few, the most popular of which perhaps is Red-skin Flour-ball, a sort which was first sent out under the name of American Red. It has a large tuber, coarse in appearance, with deep eyes, and always produces a heavy crop. It should always be grown on light soil, not recently enriched with manure, and the produce should be kept over Christmas before eating, after which it will be at its best. To cottagers and persons who are not too fastidious, Flour-ball in bulk is during the winter a most acceptable store. The Early Rose, although a great cropper, proved to be of good cooking quality in such a small number of cases, and is so generally coarse and full of eyes, that it has greatly declined in popular estimation. Gleason's Late, a large flattish long kind, having a white skin, coloured with wide bands of bright red, and more recently introduced to the public under the name of Hundredfold Fluke, is a late variety, producing a heavy crop of large tubers, having flesh yellowish-white in colour, and moderately mealy when cooked. It is a capital keeper. On the whole, I consider this kind preferable to Flour-ball. Perhaps the best two of all the American sorts are Climax and Prolific. The first is a large, coarse, deep-eyed tuber, never handsome, but having very white flesh, and comes more closely to our Regent than any of the rest; the skin is roughly netted, and when cooked the flesh is mealy, and, if the tubers are not too large, cannot easily be distinguished from the Scotch Regents. It is a large cropper, and is not unlikely to become a favourite with some of our market growers. In the matter of crop and appearance my favourite is Prolific, a sort that, if grown in moderate soil, produces a large quantity of clean even tubers, somewhat pebble-shaped, having shallow eyes, and presenting altogether qualities that make it the most acceptable of the lot for exhibition. It keeps well, and even improves by keeping. The skin is of a brownish white, and the flesh is white. Late in the winter it cooks mealy and good. I heartily commend the cultivation of this kind to all who have not yet tried it. The Late Rose has been strongly commended as a good keeper, and of improved quality, but when it grows large it is full of deep eyes. It bears a close resemblance to the Early Rose, but the skin is rougher. I have mentioned but six sorts; there are, however, as many more kinds of American raising, but I believe I have pointed out the best. The family likeness that runs through them all is apparent, and American raisers would do well to import some of our choicest sorts in order to improve their own strains. If we hybridise in the same direction, Potato growers on both sides of the Atlantic will be mutual gainers. A. D.

A French Vegetable Market.—The stalls or sittings are in regular lines; and the pavement is so broad that there are two or three avenues along its width; the purchasers passing easily up and down, chaffering, joking, and packing their baskets. Here and there we come upon a true lady of the Halle, of powerful arm and shoulder, potent voice, and fresh, hard, staring face. The vegetable women outside are, to her, the vulgarians of the market. A stately lady sits, just within the market gates, deigning to sell piles of Artichokes at one and two sous each. An old gentleman endeavours to bargain with her; but she tells him loftily they are to be taken or left at the marked prices; and he ends by putting three into the tails of a snuff-brown coat that had seen many seasons. He had a keen French face, I thought, like Voltaire's in the foyer of the Comédie Française. The Endive is superb, in yellow tufts, of the form and proportions of Louis Philippe's pyramidal wig. The Barbe-de-capucin, in long golden tresses, was compared, by the gallant Baker, to naiads' tresses; then there were Onions in bunches at one sou each; and then artistically bound groups of vegetables—Carrots, Turnips, Onions, Leeks, and herbs—for the bouquet garni, as the cook calls it. These bouquets of vegetables—which vary in price from two to five sous, according to their size—are the vegetable ingredients of the pot-au-feu. The bouquet garni is a work for the cook's own hand to perform. She takes Thyme, Chervil, Parsley, and an Onion for centre piece, in which she sticks half a dozen Cloves, and—just a suspicion of Garlic. This she casts into the pot-au-feu. "Bless me—winter; and here are delicious spring Radishes at a penny a bundle!" Mr. Baker suddenly exclaimed. Then rapping his umbrella upon the pavement, he turned sharply upon me, and added, "Will you be good enough, Fin-Bec, to inform me why I cannot have these at my own house this time of the year?"—*All the Year Round.*

Method of Preserving Cabbages in Winter.—The following method of preserving Cabbages in winter is much employed in France:—The Cabbages are stripped of all their green leaves, and the rounded heart or head is hung up to dry for some days in an airy place. They are then very finely sliced with a sharp knife, and placed in thin layers in sieves, which are hung up in an airy place. The sliced Cabbage is also stirred every day in order to facilitate the absorption of its moisture by the air. After this the sieves are exposed for some time to the heat of a cool oven, until the contents are thoroughly dried. Cabbage treated in this way does not change its colour, and very much resembles vermicelli in appearance. It loses about one-third of its bulk in the course of the process. When quite dried it is kept in bags hung up in a very dry and airy place. It should be examined from time to time, and if there is any appearance of moisture, it should be again placed in the oven. If this is not done, it soon rots. In cooking it, it is first soaked for some time in water, and then boiled like fresh Cabbage, from which it is very difficult to distinguish it in taste when served up.

Potatoes.—Will any readers of The Garden favour me by saying if they know a Potato named "Snow Flake," and if so where it can be obtained?—R. Gilbert.

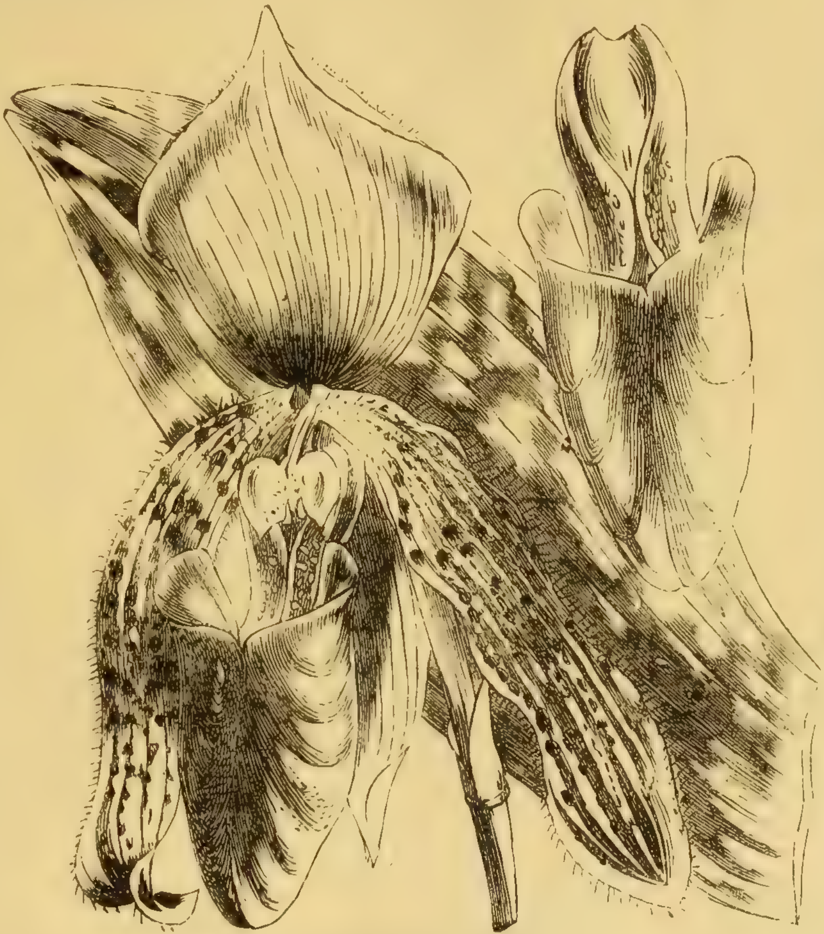
Cutbush's Magnum-Bonum Pea.—When fully known this Pea will be grown as extensively as that invaluable variety, Veitch's Perfection. The flavour, habit, and productiveness are all that can possibly be desired. The variety is, therefore, certainly worthy of a place in every garden.—Thomas Rabone, *Alton Towers.*

THE INDOOR GARDEN.

CYPRIPEDIUM VEITCHII.

Of the many forms which the Bearded Lady's Slipper (C. barbatum) has taken, this is one of the best; indeed, when well grown it may be considered to be one of the noblest Cypripedes in cultivation. Its nearest rival in the group to which it belongs is the scarce, but somewhat less beautiful C. Dayii, a variety which differs from C. Veitchii in its broad ribbon-like petals being striped, and not spotted. All the varieties of C. barbatum may be grown in an ordinary plant stove, where they may be had in flower for upwards of three months during spring and summer. They grow well in a compost consisting of fibrous peat, rough lumps of loam and dried cow-dung, together with an admixture of coarse sand and broken crocks, and the surface of the compost should be covered with a layer of fresh Moss, which hides the soil, and gives the pots a neat appearance. The pots should be thoroughly well drained, and an abundant supply of water is essential to the plants when they are making their growth. Cypripediums should never be allowed to become dry, as they have no pseudo-bulbs to fall back upon, and if they get into a parched and shrivelled condition they are extremely liable to the attacks of thrip and red-spider. Repeated sprinklings with a fine syringe goes a great way towards keeping them in a clean and healthy condition, and when in a fresh vigorous state few Orchids are more interesting than the one we now figure, and its congener C. Dayii.

F. W. B.



Cypripedium Veitchii.

COCCOCYPSELUM DISCOLOR.

Nothing in its way could possibly be more charming than this pretty little plant has been during the past winter, laden, as it has been, with beautiful blue berries, which have remained plump and brilliant during the dullest period of the year. My plants are grown in wire baskets, lined with sphagnum and filled with a compost of fibrous loam and peat, with the addition of a little leaf-mould and silver sand. The baskets are suspended from the rafters in a tropical aquarium, but I have no doubt that a moist stove would suit this plant quite as well. It is associated with other basket plants, such as Torenia asiatica, various kinds of Æschynanthus, Asystaceas, variegated Panicum, and Ferns of different kinds, but I cannot say that I approve of the mixture. The Coccocypselum I apprehend would look best alone, or with the addition only of a few seedling Adiantums, or Club Mosses of the Martensii section, inserted between the meshes of the wires. Thus managed, whether laden with its lapis-lazuli coloured bead-like berries or not, it would form a pleasing object. Young plants of it may be raised from seeds, separated from the soft portion of the berry, and sown in a close stove temperature now. Raising plants of this from seed is, however, seldom resorted to, for they may be readily obtained by layering the shoots on the surface of the baskets; every joint thus layered will emit roots; two points are, therefore, thus secured, viz., the equal spread of the shoots for the time being, and the rooting of the layers for division and transplanting into separate baskets at the general potting season, which is generally about this time of year. The points of the young shoots may also be taken off, and inserted under a hand-light or bell-glass in the stove, well shading them for a time from the sun, when they will soon strike root; afterwards pot them off singly. If practicable, give them the advantage of some bottom heat, and excellent plants will be the result. In early spring, place two or three of them in a basket, treat them like old plants, and in winter a crop of bright berries will be the result.—M. M., *Inverness.*

SAXIFRAGES, ETC., AS INDOOR PLANTS.

At page 210 of the present volume of The Garden, I notice that Mr. Williams, with good reason, has directed attention to the value of various species of the genera Saxifraga, Sedum, and Sempervivum, as indoor decorative plants, and throws out several capital suggestions as to the various ways in which they may be grown for that purpose. But, for what reason I know not, he gives Saxifraga longifolia as the "most lovely species known." It may be the finest as regards its beautifully formed encrusted rosettes, of which I have seen several splendid specimens nearly a foot in diameter; but for freedom and beauty of bloom, there are other species in its own section that quite equal and, I think, surpass it in the handsome pyramidal spikes which they produce, to wit, the true S. pyramidalis, which I have seen, both in pots and planted out, throw up a spike nearly 2 feet high, and literally covered with panicles of large, white, and prettily spotted flowers from the base to the summit. Then, again, there are several members of the large-leaved section, which, as regards beauty of bloom, I think also superior to S. longifolia. Of these I would mention purpurascens, which produces dense corymbs of lovely rosy-purple flowers, and S. ligulata, a large-leaved species from Nepaul, which also produces showy flowers of a rosy colour. Passing on to his selection of twenty-four Saxifrages suitable for planting in a one-light frame, Mr. Williams omits such choice gems as Rocheliana, cæsia, aretioides, and diapensioides, all of which are eminently suited for this purpose, and moreover he omits his lovely S. longifolia, of which fine specimens have been grown in such a position. A first class selection of twenty-four Saxifrages for growing in the way just indicated I think will be found to be the following: — S. longifolia, pyramidalis, pectinata, cæsia, aretioides, diapensioides, Rocheliana, Aizoon, and incrustata, belonging to the encrusted section, all distinct and good kinds; S. palmata, atropurpurea, muscoides, cæspitosa, any of the varieties of hypnoides, and gibraltarica amongst the mossy section; and the following nine not included in either of the above sections, and which are quite distinct in character, viz., juniperina, Guthriana, oppositifolia, retusa, aizoides, aspera, Bucklandii, ceratophylla, and dahurica, the last of which is included in Mr. Williams' list, as is also capillaris, which I have always found to be the same as dahurica. The selection of twelve Sedums made by Mr. Williams is not the best, and I would suggest the following as a more suitable selection for frame culture, viz., Sedum anglicum, album, brevifolium, dasyphyllum, farinosum, spurium, grandifolium, rupestre, Sieboldii, Ewersii, Sempervivum, and glaucum. His suggestion as to these plants being grown in glass cases is a good one, and one that if carried out would doubtless yield enjoyment to many, but for this purpose none but the very choicest should be selected. I would particularly recommend such Saxifrages as longifolia, Rocheliana, cæsia, aretioides, pectinata, Guthriana, juniperina, muscoides, palmata, and Bucklandii as likely to give the greatest satisfaction grown in that way, and as having the greatest diversity of form. All the Sedums given in my list will do for the purpose, but I would omit Sieboldii and Ewersii, as they are herbaceous species, and are only attractive in the summer months, whereas the remaining kinds are always interesting.

Of the genus Sempervivum, of which Mr. Williams has not made a selection of species, I would suggest the following as being a good list of twelve kinds for ordinary uses, viz.:—S. arachnoideum, calcareum, flagelliforme, glaucum, Pittoni, Mettenianum, triste, montanum, Wulfenii, piliferum, spinosum, and chrysanthum; the two last being often called Umbilicus. The above enumeration will be found a very suitable one for frame culture; but in reducing the list to six species as most worthy of being grown in pots or glass cases, as suggested by your correspondent, I would particularly recommend S. spinosum, Wulfenii, arachnoideum, montanum, calcareum, and Mettenianum, as being quite distinct in form.

In addition to the modes of culture suggested by Mr. Williams, I would add another way in which such plants may be grown successfully, and one that is within the reach of all classes. I allude to their culture in pots on the window-sill, a way in which I have grown many of them successfully. Indeed, some of the plants belonging to these families are among the most useful subjects that can be had for window decoration, for they are attractive at all seasons, either in flower or out of flower. Last summer I saw in Garratt Lane, Wandsworth, a cottage window-sill containing about six pots of Sedum album in bloom, and so profuse was the blossom that the window-sill appeared to be a complete mass of pinkish-white inflorescence, that fell over and completely hid the fronts of the pots. This species does well in pots, and many others will likewise succeed well in similar situations. The soil which I use for such plants is a mixture of about two-thirds good yellow loam and the remainder about equal portions of river sand and leaf-mould. The chief thing to guard against is their becoming too dry; I always give my plants a good supply of water during the growing season from March till the beginning of October; but during the other months the rainfall is usually sufficient. A Grower of Hardy Succulents.

Battersea, S.W.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Grafting Pelargoniums.—I have grafted five kinds on one stock, by way of experiment. The stock was Tom Thumb, the kinds Bijou, Mrs. Pollock, Christine, variegated Ivy-leaf, and the common Ivy-leaf, all of which "took" well in a moderate bottom-heat in a Cucumber frame.—J. C.

Foreign Evergreen Ferns.—Kindly give me the names of such of these as you think would be suitable for a Wardian case.—W. W. [The following will doubtless answer your purpose, viz.:—Adiantum cuneatum and hispidulum, Polystichum triangulare, Nephrodium molle, Asplenium bulbiferum and Fabianum, Davallia Novæ-Zealandiæ and tenuifolia, Anemidictyon Phyllitidis, Blechnum occidentale, Cheilanthes alabamensis, Litobrockia vespertilionis, Niphobolus rupestris and pertusus, Platyloma rotundifolia, Polypodium Paradiseæ, Pteris cretica, Pteris scaberula and longifolia, Onychium japonicum, Pleopeltis Billardieri, Lomaria lanceolata, Doodia lunulata, and Lastrea glabella.—G.].

Cool Greenhouse Exhibition Plants.—Would you kindly name a dozen greenhouse plants suitable for exhibition purposes, which may be got for a moderate price, and which would not be injured although the temperature might at times during the winter fall as low as 36°.—T. G. [You do not state the time at which you wish to have the plants in flower; if you require them from the middle of May to the middle of June, omit the last four of the following dozen, and if you want them from the middle of June to the middle of July, omit the first four, viz.: Adenandra fragrans, Pimelea Hendersoni, Epacris Eclipse, Boronia pinnata, Genetyllis tulipifera, Erica Cavendishii, Aphelexis macrantha purpurea, Dracophyllum gracile, Phænocoma prolifera, Kalosanthes Phœnix, Aphelexis macrantha rosea, and Statice profusa.]

Striking Yuccas.—A very large Yucca aloifolia has been growing in the centre of a greenhouse here, the top of which it had reached, and as it was very much admired my employer wished me to shorten it a little if possible. I got a box made, measuring about eighteen inches across and twelve inches in depth; this box was made in halves, out of the bottoms of which I cut a small half circular bit, so as to allow the stem of the plant to pass through the box, which stood on three legs about four feet from the ground; I then got some good loam and leaf-mould, to which was added a portion of silver sand, and filled the box with the mixture. In April last I made an incision in the bark of the Yucca, and on examination the following autumn I found the box full of roots, which had issued from the incision, thus enabling me to lower my specimen four feet without detriment to the plant.—J. C., *Kyle, Waterford.*

THE ARBORETUM.

PLANTING FOR ORNAMENTAL COVERT.

A correspondent asks for some information about planting the ground with low shrubs, to save the expense of mowing, to look ornamental, and at the same time to form a good covert for pheasants. There are various ways of doing this the simple, the ornamental, and the elaborate each of course requiring its proportion of expense. At Holkham many of the plantations are carpeted with St. John's Wort, which grows to the height of a foot, and forms, intermixed with Fern and Brambles, a capital summer covert for birds. At Claremont scores of acres of the shrubbery walks are covered almost exclusively with common Laurel, which is pruned down to a certain height, say from 18 inches to 3 feet, and forms an admirable covert, through which beaters or sportsmen may pass with comfort. When interspersed with dwarf Rhododendrons and other American plants, such a covert may be made exceedingly ornamental. The Pinetum at Basing Park, when planted more than thirty years ago, was intersected with various gravel walks, and nearly the whole of the ground was planted with Berberis Aquifolium, which the keeper pronounced a capital covert, inasmuch as the berries afforded food and the bushes themselves shelter. These may be considered the simple methods of forming game covert; and there are scores of plants besides those I have mentioned which may be used for the same purpose, the cheapest of which undoubtedly is evergreen Privet. But in a Pinetum of choice trees something more than mere game protection may be desired, and then we should throw in groups of dwarf evergreen shrubs, so arranged as to produce a pleasing effect. Plants suitable for this purpose are plentiful, but the following are a few of the most popular:—

Aucuba japonica
Box
Berberis dulcis
,, empetrifolia
,, Darwinii
,, Aquifolium
Cotoneaster microphylla
,, acuminata
,, Simmondsii
Holly, green and variegated
Hypericum calycinum
Ivy of sorts
Juniperus prostrata
,, tamariscifolia
,, sabina
,, ,, variegata
Laurustinus
Laurel
Ligustrum ovalifolium
,, japonicum
Tamarix gallica
Gorse, double and common
Yew

Of what are called American plants I may name Andromeda, Erica, Gaultheria Shallon, Kalmia, Ledum, Pernettya, Vaccinium, and Rhododendrons. There is a wide field of evergreen shrubs, to which might be added a number of berry-bearing plants, foremost among which I would name, for its delicious odour, the Sweetbriar, and lots of climbing Roses, and above all the Blackberries. Then there is the Snowberry, Symphoricarpus racemosus, grateful food for pheasants I am told, and for some other things, though not a covert plant—at least not for winter, I believe. One of the most useful plants that can be planted is the Jerusalem Artichoke. Pheasants are specially fond of this, but of these plants, or rather I should say shrubs, the arrangement must depend upon the taste of the planter. For example, I would not plant a light-foliage plant under a Deodar, neither would I plant a dark one under the Cedar of Lebanon or Cedrus atlantica; but I would so diversify the planting as to produce an agreeable whole with something of the picturesque about it. For example, the Aucubas and Golden Box and Hollies would give a fine patch of the palest green, or green and gold; while the Berberis would give dark green, or, in the case of the most beautiful of all of them, B. Darwinii, a very light tinge. Then of Cotoneaster, what can be so beautiful as C. microphylla, studded with its bright scarlet berries? I saw it one winter when the ground was snow-clad, backed by a dense mass of Yew, and I thought the picture was one of the finest I ever saw in winter. A slight mound raised up, or a few roots thrown down, and the Ivy, with the Clematis and Virginian Creeper, would clothe the whole with perpetual beauty. Then the prostrate Junipers—they form a complete carpet; and what so beautiful as to see Crocuses and various other bulbous plants peering through their branches early in spring.

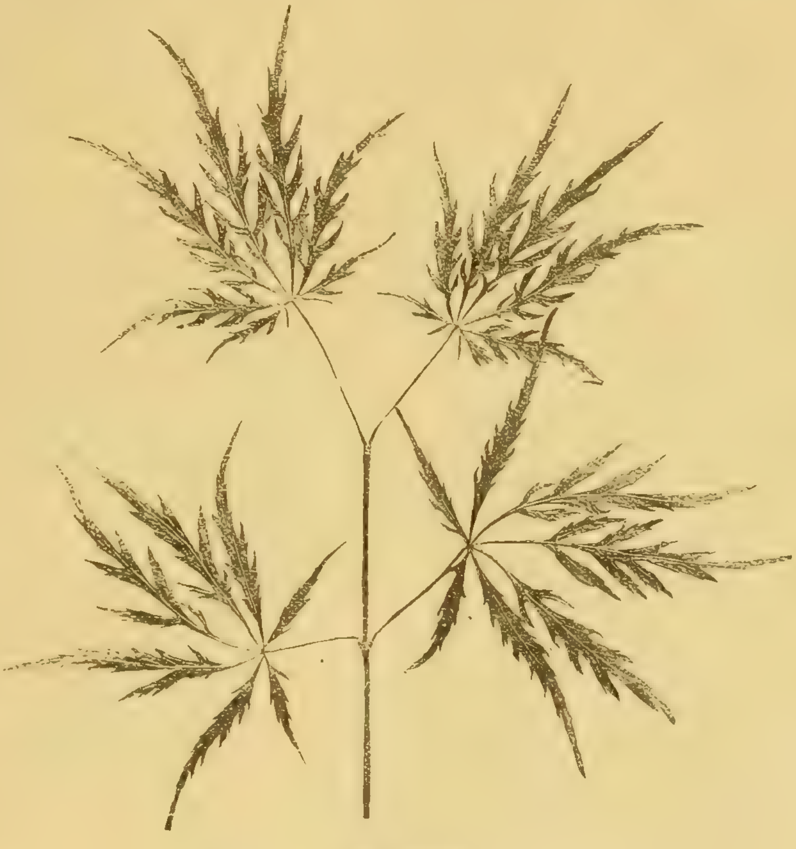
W. P. A.

THE CUT-LEAVED MAPLE.

(Acer dissectum.)

This forms a neat, deciduous, small, round-headed tree, from 10 to 15 feet high, with numerous, very slender, spreading, bright green shoots. It is a native of Japan and China, and was first introduced by Mr. Fortune in 1844. It is quite hardy, grows freely in any good garden soil, and is readily increased either by means of cuttings or layers. The leaves are distinctly seven or nine-parted to the footstalk, bright green, slightly villose when young, on long slender footstalks, and just before they fall in the autumn they assume a bright yellow hue. The lobes are parted to the footstalk, oblong, very acute, and either pinnatifid or deeply and sharply serrated. The flowers are small, red, and are produced in May in terminal stalked corymbs, containing from four to six flowers in each. The fruit or keys are small and smooth, with thick carpels and widely diverging oblong wings. This beautiful little Maple is well suited for planting singly on lawns, and deserves a place in every choice collection of shrubs, on account of its neat and elegant leaves. The length of a full-sized leaf is 5 inches including the footstalk, which is from 1 to 1½ inch long, and the breadth 4 inches. There is a very pretty variety of this Maple, with leaves of a bright purple, and which is known in the nurseries under the name of Acer ornatum.

Geo. Gordon, A.L.S.



Acer dissectum.

THE MOVEMENT OF THE SAP.

Your correspondents, "A. M." and Mr. Chamney, do not seem to me to realise the multiplicity of actions at work in the ascent of the sap. As Dr. Bastian has ably argued in his "Beginnings of Life," that vital forces are but modifications of the ordinary physical motive powers—heat generated by friction, electricity by heat, magnetism by electricity—so the ascent of the sap is undoubtedly, to a large extent, but an instance of that great law of causation, that supply is relative to demand. Nature abhors a vacuum; water tends to find its own level; fluids of different density equalise their density by the process of "osmosis." The increased temperature of spring stimulates chemical action, and especially rarifies the air. This may cause osmosis either directly or indirectly by causing pressure. Pressure forces the fluids to move in the direction of least resistance. Capillary action probably starts the sap in its ascent; but because the leaves are not developed so as to cause osmotic action by transpiration, it does not follow that it cannot be caused internally by the sun's heat. The flow of the sap is greatest during the daytime. The transformation of starch into sugar, which occurs at a very moderate temperature, necessitates a supply of water and creates current, and the intermittent pressure caused by the wind very probably, as suggested by Mr. Herbert Spencer, gives motion to the sap in the direction of least resistance. It is a process of alternate exhaustion and re-filling, not quite a suction-pump arrangement. It has been suggested to me that the heart of an animal beats by successive chargings and dischargings of electric force, as in a Leyden jar, so that the blood traverses the body by a force derived from a modified physical motive power. But the vegetable sap does not circulate as does the blood of animals. It ascends, is elaborated, transpiring water and acquiring carbon, by the decomposition of carbon-di-oxide, and descends; but is then abolished and never re-ascends.

Lector.

Willows.—Independently of the very considerable profit attending the growth of tree Willows, some of them are of great beauty. The white Willow (Salix alba), when not mutilated by pollarding, has both a beautiful and cheerful appearance in a landscape. The golden Willow (S. aurea) is also very handsome, and worthy of more notice than it has yet received, both as an ornamental and a timber tree. The Carter or red-twigged mountain Willow (S. Carteriana), with its dark-red branches and spiry head, is also eminently calculated to add beauty to our woodlands. The Royal Willow (Salix regalis), although not attaining to the size of some of the other tree Willows, is one of the most silvery trees we have, and although it was introduced in the last century, it is hardly yet known to cultivators. Salix Basfordiana and Salix sanguinea, two comparatively lately introduced varieties, are amongst the most beautiful deciduous trees we now possess. They are spiry-topped, and their manner of growth is similar to the well-known Bedford Willow, Salix Russelliana. The branches of Salix Basfordiana are of a brilliant orange colour, tipped with red, and the branches of Salix sanguinea are of a clear vermilion colour, and in winter, when divested of foliage, with the sun shining upon them, are as bright as if varnished. They are both vigorous growers, and attain a large size, Salix Basfordiana being the more vigorous grower of the two. They are perfectly hardy and will thrive in very exposed situations. It is also worthy of remark that the dense smoke of a town does not materially interfere with the healthy growth of Willows. To grow Willows in perfection they must be planted closely, say 3 feet apart each way, or 4,840 to the acre would not be too close for the first eight or nine years, when they might be thinned out to half that number. The thinnings would find a ready sale for general purposes.—*W. Scaling.*

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Weeping Ash.—In the garden belonging to Emmanuel College, Cambridge, is a Weeping Ash some 35 feet in height, and in every respect a finely formed tree. —J. J. C.

White Calycanthus.—It is reported that a white-flowered variety of the Calycanthus has been discovered in middle Georgia. It blooms continuously until the first frosts.

Exotic Shrubs.—The shrubs of which I spoke (see p. 232), are in my grounds in Cornwall, not in Devon, where I am only on a visit; and they certainly would not grow in the neighbourhood of Tiverton, which, for Devon, is very cold, and fully a month behind the south of the county. —The Colonel.

Bitter Willows v. **Rabbits.**—Being engaged planting game cover last season, I was advised to try Bitter Willows, being informed that rabbits would not touch them. However, before they were planted twenty-four hours, I found them all barked by these depredators. Lord Chesham tells me he also tried Bitter Willows, which met with the same fate. I find nothing to escape them, but common Brambles with the Brake growing among them.—R. Gilbert.

THE LIBRARY.

HANDBOOK OF CHEMICAL TECHNOLOGY.*

Amongst the really useful books which occasionally appear amid those which daily issue from the press, few, if any, surpass this in the justice of its claims to merit. It is, perhaps, unfortunate that the editor has chosen a title which apparently relegates the work to the province of the purely scientific portion of the community, inasmuch as it conveys to the general public but a scant idea of the treasures of information which it contains respecting matters with which they are daily concerned. Let us, however, explain, in the words of the introduction, that " chemical technology" means "that branch of industrial science which treats of the processes and methods by which the nature of raw materials is usually altered," excluding all the operations of mere machinery. This being understood, we will say that, as an exhaustive and lucid exposition of the various processes whereby all the necessaries of human existence which flow from this source are derived, the work before us has no equal. In the country of its author it has already reached an eighth edition, and, whatever stigma of tardiness may attach to us that we have not earlier availed ourselves of its teachings, will, we are confident, not long endure when it is better known amongst us. We cannot afford space to give more than an outline of its contents and its aim; and first we shall speak of its aim. This is to disseminate a true knowledge of the origin, preparation, and properties of the multitudinous substances which, in an altered shape, make up various requirements of our present high-strung civilization. These are, for the most part, mysteries to the many, who, even if not very closely pressed, would be sadly puzzled to account for the appearance of such familiar accessories as sugar, soap, salt, and tobacco. To such we will only say that they will here find ample enlightenment on all matters of this sort, from the extraction and appliances of gold to the mixture for igniting the cartridges of breech-loaders or the making of matches.

The contents comprise eight divisions, viz.:—(1). Chemical Metallurgy, Alloys, and Preparations made and obtained from Metals; (2). Crude Materials and Products of Chemical Industry; (3). Technology of Glass, Ceramic Ware, Gypsum, Lime, and Mortar; (4). Vegetable Fibres and their Technical Application; (5). Animal Substances and their Industrial Application; (6). Dyeing and Calico Printing; (7). The Materials and Apparatus for producing Artificial Light; (8). Fuel and Heating Apparatus. The vast amount of particulars which are embraced under these heads may well be imagined, and of the details we shall say no more than that they have been elaborated with that honest accuracy which has ever characterised the German *savant*, whether in the philological researches of a Buttmann or the historical triumphs of a Niebuhr. To the editor and translator, those who know the difficulty of translating a work of a scientific character in a satisfactory manner, will accord a unanimous *plaudite;* few of those who have even a good conventional knowledge of a foreign language are aware of the embarrassments of such a task. He will, however, pardon us if we point out only one passage, which may be amended in a future edition, viz., that at page 19, fourteen lines from the bottom—"Thus the cylinders for rolling-mills can be so made that, while the surface is very hard, they are not brittle, *and, therefore, fragile,* because the interior consists of grey cast-iron." This, however, is but a crack in the toe-nail of the statue.

Catalogues of Bromeliads.—A noteworthy catalogue of Bromeliaceous plants grown in the Botanic Gardens of the University of Liége has recently been issued. It contains the names of upwards of 200 species and varieties, with the synonyms of each. It will, therefore, be found very useful to collectors and cultivators of these plants. The names of M. E. Morren and M. E. Rodemburg, attached to the catalogue, guarantees its accuracy.

ARTIFICIAL CASCADES.

"The artificial," in a landscape, if not founded on "the natural," is always, more or less, a failure. When, therefore, it is sought to create a new feature in ornamental grounds, and to do it artistically, some natural model, of suitable character, should always be adopted as an original to be followed as closely as circumstances will admit; such a cascade, for instance, as the one represented in the annexed engraving, from a scene in "Nature Pictures,"* might form an excellent model for an artificial waterfall.

It would, however, be useless to attempt the creation of such a cascade as the one suggested if the land to be treated were perfectly flat; for in such a situation water effects of quite a different character should be sought; but wherever there is a rise or slope of moderate elevation, if only of 10 or 12 feet of absolute height, a pretty and effective cascade may be created without difficulty, if a small supply of water can be made available on the higher level. By cutting a wide trench in the rising ground, from bottom to top, carrying the centre of the cutting back till the full height is reached, and the deepest part of the newly-created ravine becomes as steep as is desirable. There will then (supposing the positive height of the top of the undulation to be 15 feet above the level ground) be a slanting fall of 20 feet, or more if the slope be made more gradual; but the steeper the fall the more effective will be the result.

In cutting a ravine in a rising ground, natural rock may be found, which will answer the desired purpose, with proper management, better than any arrangement of masses of stone brought to the spot, and artificially disposed, however artistic the arrangement might be. There is, for instance, a rocky dell in the Birmingham Botanic Gardens which is a very pleasing exemplification of the advantage that may be taken of natural rock accidentally exposed during an excavation for such a purpose. In that case the earth was taken away from a rough outlying part of the grounds for the purpose of levelling and otherwise improving the more important portions of the gardens. The consequence was the creation of a hollow reaching down to the red sandstone, which underlies all that portion of Warwickshire, cropping out in some parts of the county in bold masses of rock. The hollow so created was used as a receptacle for swept leaves, rough prunings and croppings, and garden rubbish generally; but eventually, a member of the garden committee, anxious to add new attractions to the gardens, which combine pleasure grounds with the ordinary features of a botanic garden, conceived the idea that this rubbish-hole might be turned to ornamental account. It was therefore widened and deepened, with the intention of converting it into a fern glen, and with this view many rocky surfaces of fine form were laid bare, and a picturesque rocky valley formed. The sides and isolated masses of rock are now partially clothed with trailing plants, and in the more level parts with Foxgloves, Primroses, Squills, Violets, and other wild flowers, which display themselves in successive seasons of the year. Combined with the effect of suitable brushwood, these features tend to make what till lately was a piece of unsightly waste-ground one of the most attractive spots in the gardens.

Should rock of an analogous character to that which underlies the Birmingham Botanic Garden be found, in excavating such a ravine as that suggested above for forming the channel of a cascade, the desired effects would be produced, without any necessity for the introduction of artificial features; but if not, care must be taken that art shall create, in a broad and simple manner, the features that nature has failed to provide. The masses of stone must be of sufficient size to produce a massive effect, in proportion to the greater or lesser magnitude of the immediately surrounding scene. They must not, above all things, have the air of being *built up*, like the *stone steps* of the rock cascade in Hyde Park, which were intended to represent accidental ledges of rock, but which are as unartistic and as thoroughly conventional as the pretended "cataract of the Ganges," which, after many years of theatrical slumber, has just been reproduced at Drury Lane. On the contrary, a rugged tumbling together of big rocks, jammed into almost impossible positions, as by some natural convulsion, should be imitated from some real scene; and if the would-be creator of such a cascade as the one under discussion be unprepared with studies of his own from scenery of the character desiderated, the main outline of the rocks shown in our engraving offers a good and sufficient model. To the right, the downward outline is grandly broken by a large projecting mass at the base, from which portions have fallen into the bed of the stream, causing eddying rapids which might be closely imitated with the happiest effect; while on the precipitous declivity immediately above, a large and picturesque slab has fallen edgewise, the thin outline of which catches the light with sharp and sparkling effect. On the opposite side, several large masses impend over the chasm, supported, like the pendent key-stones of ancient cathedral ceilings, by the surrounding mass of superincumbent stone.

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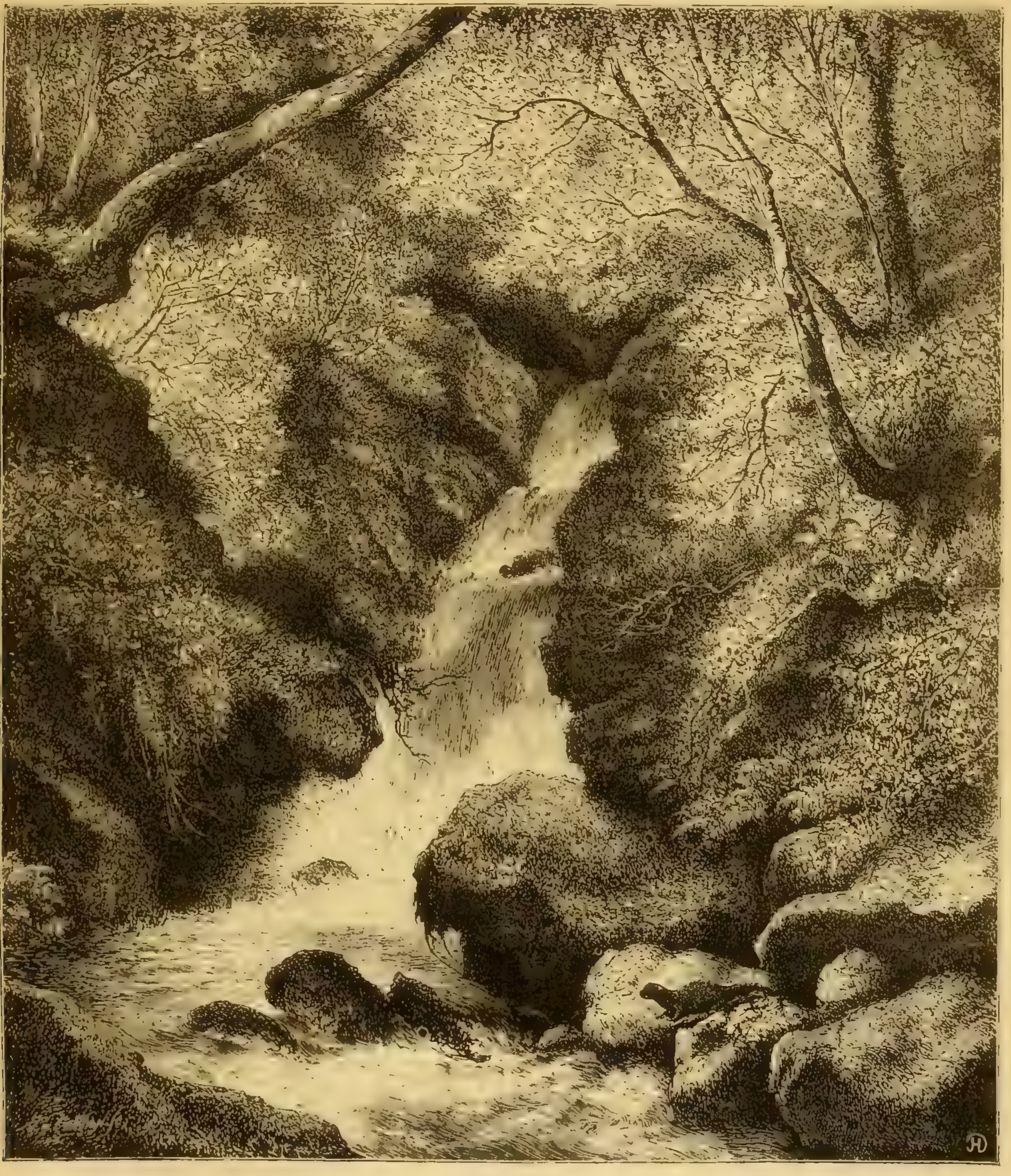
* "Handbook of Chemical Technology." By Rudolf Wagner, Ph.D., Professor of Chemical Technology at the University of Wurtzburg. Translated and edited from the eighth German edition, with extensive additions, by William Crookes, F.R.S. With 336 Illustrations. London: J. & A. Churchill, New Burlington Street. 1872.

* Warne & Co.

Trailing Brambles and Ivy must mingle with the Ferns that are made to clothe the sides of the artificial chasm, as seen in the suggested model; and trees of moderate growth, such as Birch, Alder, and Maple, and well managed underwood, formed of judiciously selected shrubs, must not be omitted. An essential feature in the composition is that the course of the cascade itself must be partially interrupted at irregular distances by rugged ledges, and, what may be called the key to the picture, the large boulder, rounded by the continual action of falling water, must not be omitted (as seen in the model), just visible in the mass of foam which its interruption creates. It is these last-named features which create the



Natural Cascade.

hoarse yet musical voice of all cascades; a voice that never fails to attract the hearer to the spot where he expects to witness the cause of sounds which, whether in the restricted enclosures of a park or the grand scenery of the Alps, have a magnetic influence which invariably tends to attract the passer-by to deviate from his path in order to look more closely upon a scene which he has already pictured to himself in imagination from the sounds he has heard.

With attention to the principles suggested, and the necessary basis of a suitable site as to height and slope, however bare and unpromising it may appear before passing under the manipulations of the garden artist, such a scene as the one represented in our engraving may be easily reproduced with success. Noel Humphreys.

THE FLOWER GARDEN.

NEW, RARE, OR NEGLECTED ALPINE PLANTS.

BY J. C. NIVEN, BOTANIC GARDENS, HULL.

Anemone rivularis.—A native of the Himalayas, growing about 18 inches high, and producing its whitish flowers in abundance. A distinct and good perennial species, readily increased by seeds, which are freely produced.

Antirrhinum asarina.—A pretty trailing plant, admirably adapted to hang over a projecting ledge of rockery, where, when kept dry, it will stand our ordinary winters. The flowers are yellowish, and about the size of those of the ordinary Snapdragon. Closely allied to it is A. molle.

Arenaria multicaulis.—From the south of Spain; resembles A. balearica, but has its leaves more ovate and ciliate, and its flowers elevated higher above the foliage and larger than that species; recently re-introduced by Mr. Maw, of Broseley.

Arnebia echioides.—A charming plant from the Ural Mountains, forming a hard woody stem, from which its annual growths are made. Its flowers are yellow on their first expansion, but after a few days five dark spots appear near the throat of the flower, ultimately assuming almost a black appearance. It is exceedingly rare; in fact, we believe is only to be seen at Comely Bank Nursery in Edinburgh. It is very difficult to increase, as it rarely seeds, and cuttings will not strike.

Aster ramosus.—An abundant flowerer. Flowers rosy lilac, nearly as large as those of A. alpinus. A neat rock plant, from the Caucasus.

Astragalus dasyglottis, *Fisch.*—A native of the Ural Mountains; grows 8 or 9 inches high, and produces an abundance of bright lilac flowers; one of the finest and freest-flowering of the genus.

Astragalus vaginatus.—Twelve inches high; produces large heads of lilac and deep purple flowers; admirably adapted for either border or rockery, but somewhat scarce in cultivation.

Campanula soldanellæflora pl. — Sometimes named C. rhomboidea pleno; but the former name is more appropriate, as the flower has all the appearance and beauty of its specific foster parent, associated with the light graceful character that is inseparably connected with the Harebell family. It is a plant of slender habit, with linear leaves. When growing strong, it attains a height of 15 inches. The flowers, being double, have a much longer duration than were they single. We have, however, never met with a single-flowered form that we could identify as the normal type of this plant.

Coronilla iberica.—With glaucous foliage and decumbent habit, not rising 4 inches from the ground, and producing freely umbels of yellow blossoms. Somewhat similar in appearance, but much larger than our own familiar Lotus corniculatus. It flourishes admirably with its woody roots well bedded in rockery, and will cover completely 2 or 3 square feet of rock surface, when so placed.

Cyananthus lobatus.—A native of the Himalayas, with large bell-shaped flowers, very similar in colour and appearance to those of Roella ciliata. It is rather impatient of too much moisture, but a plant that should find a place in all selections. It used to grow in perfection at Comely Bank, Edinburgh.

Dalibarda violoides.—A plant rarely met with, even in the most select collections. It grows about 2 inches in height, with somewhat reniform leaves, and white blossoms shaded with the most delicate rose colour. It loves a deep, peaty soil; and, though a long-lasting plant, it is by no means of rapid growth.

Dianthus cruentus and vaginatus.—Both belong to the fasciculated or clustered flowered section of this genus, and are beautiful plants, well worthy a place in all collections. The flowers in the former, elevated on a stem from 9 to 12 inches high, are of a crimson scarlet, rich and intense; those of the latter are double the size, of carmine colour, nearly equal to Calandrinia, and only 6 inches high; it is a new and rare species, continuing in bloom for nearly two months.

Dondia Epipactis (syn. Hacquetia).—A most unusual form of the umbel-bearing plants, this is amongst our earliest bloomers. It grows only some 3 or 4 inches high, and though the blossoms individually are small, they are surrounded with a bright golden involucre that reminds one of the Burnet Saxifrages (Chrysosplenium), retaining its brilliant colour for nearly two months of the spring. It is a strong-rooted plant, likes a good stiff loam, and is perfectly hardy.

Erodium curvifolium.—A good perennial species, producing flowers larger than E. romanum, the whole plant being more vigorous, and more decidedly perennial than that species.

Erythronium americanum.—A species from North America, as its name indicates; narrower in foliage, with bright yellow pendent flowers; thrives freely in deep peaty soil; but rarely met with in cultivation. It stands in a somewhat similar relationship to E. Dens-canis that Anemone ranunculoides does to Anemone nemorosa.

Geranium cristatum.—A trailing species, with peculiar crested appendages to its seed carpels. It is admirably adapted for rockery, covering fully 18 square inches; it is liable to smother more delicate plants, unless room be given to it. Flowers, lilac striated, very abundant, produced in May, and again in August or September.

Gypsophila paniculata.—Although producing small flowers, as viewed individually, yet in the mass forming a globe-like head, say 2 feet in diameter. It is without exception the most perfect model of light, airy elegance that is perhaps to be met with in the whole category of plants; it seeds but very sparsely, but forms a woody, root-like stem, and the young shoots removed, when about 2 inches long, will strike freely.

Lilium pulchellum.—From South Western Russia, is even a more beautiful species than L. tenuifolium; slender in habit, the stem rises to a height of 12 to 15 inches, crowned at the top with upright (not pendent) deep orange blossoms, slightly marked with black dots; not by any means common in gardens, but a distinct and most desirable species.

Linaria pilosa and hepaticæfolia are somewhat allied species, although perfectly distinct. They are both so dwarf as to defy their height being characterised by inches. In fact they grow flat on the ground and produce their lilac blossoms just raised above the foliage very freely.

Linum flavum (syn. tauricum) is a distinct herbaceous alpine, all the previous year's growth dying quite away during winter, a fresh growth rising in early summer, from a substantial woody, underground stem. It grows 9 inches high; flowers of a more decided golden colour than those of either L. arboreum or campanulatum. Well worth cultivating either for border or rockery purposes.

Œnothera pumila, as the name would indicate, is of diminutive size, growing about 4 or 5 inches high, forming dense, compact tufts, and flowering abundantly. It possesses a beauty which is much enhanced by its modest simplicity.

Œnothera riparia.—Considerably more vigorous in growth, but with a somewhat similar habit to the foregoing. This species, flowering freely and continuously, has been introduced into our flower-gardens; but, though scarcely adapted for that purpose, it forms a beautiful rock or dwarf border plant. Its flowers are canary yellow, and nearly 1½ inch in diameter.

Onosma taurica.—A Boraginaceous plant, producing an abundance of tubular, somewhat ventricose, canary-coloured flowers, on long racemes; is a noble rock plant. It should be planted on an elevated knoll, so as to allow its branches to hang over the surrounding rocks. Though perfectly hardy, it is somewhat impatient of water during winter, and if growing very vigorously, is liable to rot off.

(To be continued.)

VIOLET CULTURE.

VIOLETS are no longer, as they were in our childhood's days, the harbingers of spring, but they come upon us with their innocent and welcome faces in the cold nights of autumn, and cheer us with their delicious odour when all around is dark and dreary. For mere out-door growth and for winter blooming the Russian is the most useful variety, as you may sweep the snow away and gather it fresh. The Czar, a more recent variety from the Russian, is much larger—more than double the size—and grows upon long foot-stalks; but it is not so hardy, cold cutting winds scorching the leaves up very quickly, while under the same circumstances the Russian will not be injured at all. The Russian Violet is grown very extensively for the supply of the London markets, though the Czar for spring work is beating it, especially when grown in sheltered situations; then the blooms come up with unusual vigour. Now, if we seek the Violet in its natural habitat, we find it nestling upon sheltered sunny banks at the foot of hedge-rows, and upon good though not perhaps rich soil. Mr. Ingram, of Belvoir, who grows and gathers Violets by the bushel throughout the winter, upon a soil where years back it was said Violets could not be grown, finds it advantageous to imitate the natural conditions; and hence he either throws the ground into slight ridges sloping to the sun, or plants upon well enriched ground, where the under-lying roots of deciduous trees control and regulate the deluge of water in a dripping season. In such a situation he finds the growth of the plant to ripen properly, and a fine supply of flowers to be the consequence, while in rich and open soils leaves take precedence of the flowers. The routine cultivation of the Violet consists in dividing the plants in April or early in May, divesting them of all small runners, and planting them upon well-enriched ground in patches of two or three strong plants at a foot apart. Through the summer the ground is kept free from weeds, and the plants are frequently watered and kept free from runners. In this manner they form close compact plants with strong crowns, from which an abundance of flowers is produced. Violets, more especially in the open garden, are very subject to the attack of red spider. The best remedy for this pest is copious watering with the garden engine, by which the insects may be dislodged, and then dusting the plants, especially on the under sides of their leaves, with sulphur. Two or three dressings in the course of the season will generally be sufficient to keep the plants clean; and, if soap-suds be added to the water when washing the plants, it will not be less effective.

The best place in which to bloom the Violet early and regularly is under the protection of glass in a pit or frame. In some gardens glass is used very extensively for that purpose, as many as thirty or forty lights being employed. Supposing the pits to have carried a crop of Cucumbers or Melons through the summer, the best plan is to clear away the soil, and, if the heating material is quite spent, to remove the most decayed parts and add sufficient fresh leaves to create and maintain a gentle heat for a lengthened period. For this purpose a foot or 18 inches of fresh leaves may be sufficient, putting them in a layer at the bottom of the pit, and covering them with the partly spent material. This should be done not later than the first week in October, then treading the mass quite firm, and filling the pit so full, that, when a six-inch layer is added, the surface of the bed will not be more than 6 inches from the glass. The soil of the old Cucumber bed, to which a third of fresh loam may be added, will be suitable material to plant in. In removing the plants, retain a fair proportion of soil with each, divesting them of their runners as you proceed with the work; and as you plant, place the plants sufficiently close together to have a compact mass without the foliage being crowded. Fill the soil in firmly between the plants, give a good soaking of water, both to wash the foliage and soak the roots, and the work is done. It may be necessary to shade the plants for a few days until they make fresh roots; but then the more fully they are exposed to the sun through the day, putting the sashes on at night, the better. Once properly soaked, but little water will be wanted until after Christmas; indeed, it is necessary to keep the foliage dry, or the flowers will damp off. At the same time, keep the soil between the plants clean and healthy by removing weeds and decaying leaves, and by frequently moving the surface with the hand or hoe. The subsequent treatment will be comprised principally in ventilating and gathering the crop. It will be wise to protect the plants from frost, and for that purpose the pits must be covered down with mats and other material, according to the severity of the weather. Should water be required, apply it warm, and pour it carefully between the plants, choosing a dry, sunny day for the purpose, so as to get the surface quickly dry. This will be the plan up to the commencement of the new year; but then, as the sun gains strength, more liberal treatment may be indulged in. The plants may be syringed on sunny mornings twice or thrice a week, and they may receive an occasional soaking of weak manure-water, which will impart great strength to the flowers. This is best prepared from soot and guano; but it should be quite clear at the time it is used, and if the chill be taken off so much the better. The preceding treatment relates mainly to the Neapolitan and Czar varieties. Both, of course, will bloom in the open air, the foot of a sunny wall being the best place, and both will make nice beds in a suitable situation. W. P. A.

THE DOG'S-TOOTH VIOLET.

THIS obtains the name of Dog's-tooth Violet because of the long fang-like tuberous roots that are white in colour like a tooth. Apart from the lovely flowers the plant produces, the leaves of the red variety especially are very handsomely marked. As soon as the ice and snow which hold the earth in bondage in February are dispersed by the warm breath of spring, it issues forth, first unfolding its handsomely marked leaves, and then its charming flowers, borne singly on stems 4 inches to 6 inches high, and drooping gracefully. The flower is surpassingly lovely, and it comes into bloom with the Snowdrop, Hepatica, and spring flowers. A moist peaty soil, with which has been mingled a good deal of sand, appears to suit the Dog's-tooth Violet as well as any. Shady spots are generally recommended for its culture, but it is frequently met with in positions fully exposed to the sun, and doing well. In some localities it appears difficult of cultivation, mainly from the unsuitability of the soil; in others just the opposite results—it flourishes with all the vigour of a native plant. In the midland districts, where there is more humidity pervading the atmosphere than in the south, it scarcely fails to do well. In addition to the imported species, which bears rosy-purple or lilac flowers, there are also varieties of it, such as Album, white; Purpureum, purple; and Roseum, rosy. These have been selected, because showing a certain distinctness of colour, and have been found to retain it when in cultivation. There is a distinct large-flowering type of the original species, known as Major, in which the leaves and flowers are both larger than is usually seen. The purple-flowering varieties have the green leaves handsomely marked with reddish-brown, and when at their best are more attractive than those of some handsome-foliaged plants that are sold at a high price. The white-flowering variety has the leaves blotched with a kind of whitey-brown colour. There is also an American species, named E. americanum, which bears yellow flowers, and blooms a little later in the season. A variety of this is also obtainable, having brown spots at the base of the flowers. It is recommended that every third or fourth year the bulbs be lifted, separated, and replanted. QUO.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Ranunculus cortusæfolius.—This fine plant, a native of the Canary Islands, bloomed beautifully here in the early part of last summer. It is perfectly hardy, but requires a shady, sheltered nook, and thrives well in peaty loam. In the second supplement to "Loudon's Encyclopædia of Plants," it is said to be the handsomest of all the Crowfoots. It is certainly a very distinct and beautiful species, which only requires to be known to be appreciated.—J. WHITTAKER, *Morley, Derby.*

Dianthus barbatus atropurvoureus.—This is a long name for a form of our old aquaintance the Sweet-William; but it botanically expresses the colour and the foliage of a variety that is grown in West Middlesex. Its merit is the character of its foliage, which is very large and robust, and is of a deep coppery hue, almost as effective in a mass as Dell's Crimson Beet; the bloom is of a crimson red colour, but the quality is indifferent. As a winter decorative plant it would prove most useful, as its peculiar hue is most predominant from the end of September until the end of March, and it would be effective a month later if the young shoots were pinched out.—A. D.

Crocus Enemies.—The Crocus destroyers which your correspondent Mr. Newman says have been so troublesome to him, and which he cannot discover, are the common house sparrows, which have cut off numbers of mine just in the manner he describes; and if he watches in the morning or at any time when the sun is shining, he will see these mischievous little torments at work. He will also observe that they do not eat or seem to make any use of the blooms, but as soon as one is cut off will go to the next, and so on. Numbers of my Crocuses are spoiled in this way every year, particularly the yellow ones.—A. H., *Upper Norwood.*

GARDEN PORTRAIT GALLERY.

JEAN DE LA QUINTINIE.

BY NOEL HUMPHREYS.

Jean de la Quintinie, Director-General of Gardens to Louis the Fourteenth, one of the most distinguished heroes and worthies of French horticulture, was an accomplished scholar, and of gentle birth. He was highly esteemed by his contemporaries, of all classes; and Perrault, in his magnificent work entitled "Hommes illustres qui ont paru en France pendant ce siécle," places La Quintinie among the number. In that magnificent work, illustrated by a series of portraits which are masterpieces of the engraver's art of the period, that of this eminent gardener holds a conspicuous place by the side of the Racines, Corneilles, and Turennes of the "grand siécle."

Jean de la Quintinie was born at Chabannais, in the district of Angoumois, where his paternal home is still pointed out to visitors as one of the most interesting monuments of the place. He was sent to Poictiers to be educated, and distinguished himself in *belles lettres*, philosophy, and jurisprudence; which last he studied as the basis of the profession which had been selected for him by his parents, notwithstanding his strong predilections for horticultural and agricultural pursuits. On proceeding to Paris, with a view to commencing his legal career at the bar, he at once received his diploma as an advocate. Being gifted by nature with an agreeable and ready flow of eloquence, he was at once successful, and but for a series of fortuitous circumstances, he might have continued to waste his powers in the barren victories and *tracasseries* of litigation. Having, however, abandoned the active prosecution of that career for a time, in order to accept a lucrative and advantageous appointment as private tutor to the eldest son of M. Tamboneau, president of the Chambre des Comptes, events so moulded the direction of his career that he never seriously resumed his legal pursuits. The appointment led to a prolonged tour in Italy with his pupil, during which his original taste for gardening and horticulture became more actively developed. Even while busy with the dry drudgery of the law, he had found time to read all the ancient authors who had treated of gardening or agriculture—Virgil, Varro, Columella, and others; and in the course of the Italian tour with his young pupil, he lost no opportunity of indulging his taste in that direction, by visiting the magnificent villas and gardens of every kind in that country, and especially studying the Italian methods of agriculture, and the cultivation of fruit trees. During this journey his observations led him to form many theories which he afterwards reduced to practice with eminent success. His first actual experiments were carried forward in the gardens attached to the new residence of his patron, M. Tamboneau. This mansion, or hotel, as the French prefer to call such an abode, was erected in 1641, on ground purchased from the University of Paris, and was the first house of the present Rue de l'Université. The gardens which then surrounded it were of considerable extent, and their entire management was entrusted to the tutor of the younger Tamboneau. La Quintinie, profiting by this opportunity, not only established a noble fruit and flower garden for his patron, but also found time in the midst of the classical and legal studies necessitated by the education of his pupil, to carry out a number of interesting experiments which he had long meditated. His theories concerning root pruning, on the transplantation of trees, and branch pruning were much in advance of his day, and were so severe in some cases, that contemporaries, jealous of his great success, called him the mutilator instead of the cultivator of trees.

He was, however, in no way offended by their incredulity; and instead of resenting it, sought rather to inspire them with his own love of knowledge, and his experimental methods of arriving at it, in order that they might prove for themselves the value or worthlessness of his theories. He had no secrets from true lovers of horticulture. All the most cherished results of his ingenious hypotheses and endless experiments being freely communicated: for he placed the progress, spread, and general practice of his favourite art far above any private gain he might have secured by keeping his discoveries to himself. Animated by such views, he established an active correspondence with horticulturists in every part of Europe where gardens were cultivated, and travelled through France, Belgium, Holland, Denmark, and England for the purpose of investigating the methods of culture pursued in those countries. The King of England (James II.) made him tempting offers with the view of retaining his services, and pressed him to accept a suitable appointment; but his attachment to his own country prevailed, and he returned to France, but not till he had established many valuable and lasting friendships; and he continued to the end of his life to correspond with many English noblemen and scientific men. It is stated by his French biographers that those letters were collected and published; but as no trace of such a publication can be found, the assertion is possibly a mere conjecture. Only one letter of La Quintinie's to an English correspondent is now in existence, and that one has never been published. It is to be found among the records of the Royal Society, and was addressed to Mr. Oldenbourg, then Secretary. The French biographers were equally wrong in denying the translation of La Quintinie's works into English by the celebrated John Evelyn; stating that the work on gardening translated by Evelyn was not that of La Quintinie, but of another and very inferior French author on horticulture. The answer to this groundless assertion is, that there is now in the office of The Garden a copy of Evelyn's translation of La Quintinie, which was published very soon after the appearance of the original work.

La Quintinie was received on terms of equality by the highest nobles of France; his conversation upon all subjects connected with science and literature being highly appreciated. The celebrated Prince of Condé, who was an enthusiastic gardener and agriculturist as well as a great soldier, delighted in his companionship, as did many other eminent men of the time, of various ranks and professions. When his fame as a scientific horticulturist reached the ears of the king, Louis XIV., he was sent for to Versailles, to direct the preparation of sites suitable for the growth of fruits and vegetables, and by such an addition render complete the great series of ornamental woods and pleasure-gardens planned and carried into execution by Le Notre, who had so triumphantly succeeded in blending art with nature, architecture with foliage, sculpture with flowers. The king told him, on his arrival, that he had then become most anxious "to add the useful to the beautiful," declaring that no other than Monsieur de la Quintinie should assist him in that agreeable task.

The site of the old Jardin Potager which had existed since the time of Louis XIII. was found to be far too small for the existing requirements, and was moreover objectionable both on the score of aspect and the natural sterility of its soil; it was, indeed, found to be so entirely unsuitable that some proposed to have the royal fruit and vegetable gardens established at St Cloud. But this proposition was overruled by La Quintinie, who strongly urged the king not to allow the most magnificent palace in the world to remain without gardens on the spot capable of furnishing the royal table with all the requisite luxuries of fruits and culinary vegetables; and this view eventually received the royal sanction. The creation of extensive fruit and vegetable gardens at Versailles being thus determined upon, La Quintinie was not long in fixing upon a suitable situation, and the position he selected possessed far better soil than any other site in tolerably close proximity to the palace, while the aspect was almost all that could be desired.

His excellent plans were, however, frustrated, and he was compelled to change his intentions entirely, in consequence of a mere Court caprice. He and his plans, and the character and situation of the new gardens were frequently the subject of conversation among the courtiers who more immediately surrounded the King; and one day a brilliant *cortége*, returning from a day's hunting in the forest, halted for a short space on the slope of a rising ground, at some distance from the grand new palace, when one of the ladies of the hunting party, struck with the pleasant prospect, declared that the spot on which they were assembled was the very one upon which *ce cher De la Quintinie* ought to establish his projected gardens; and the lady in question being beautiful and, consequently, popular, her views concerning the matter in question were very generally supported, and met with Royal approbation. The result was that some thirty acres of about the worst land conceivable had to be accepted by La Quintinie in lieu of the site he had himself selected; yet, in order to show what science could effect under the most disadvantageous circumstances, he at once commenced the arduous task, like a true Frenchman, with smiling acquiescence, though he afterwards confessed, in considerable detail, and with some humour, the almost impossible character of the task that had been thrust upon him. The soil, he said, was of that peculiar nature that, during summer, it condensed itself into hard masses, separated by innumerable arid cracks, while in winter it dissolved itself into a thick, sloppy *soupe*. It was, in short, a soil that could neither be enriched nor improved, but had simply to form the basis of an entirely artificial super-soil created with vast cost and ingenuity by the gardener. The end of the business was, that a fine garden was established; but, at a cost of 1,800,000 francs, while, on the site originally selected, the necessary outlay would not, according to La Quintinie, have been more than one-sixth of that sum, namely, under 300,000.

JEAN DE LA QUINTINIE.

In this undertaking, with the object of obtaining as great an extent of wall as possible for Peaches, Apricots, Pears, Figs, Grapes, and choice Plums, he first enclosed a space of 12 acres with a fine high wall; surrounding it with eight walled enclosures of about one acre each. But with all this luxury of wall, it was only his very choicest fruits that were trained; not even the Figs were treated to this luxury, except one or two of the more tender kinds, though the Fig was the favourite fruit of the King. On these matters that great personage himself, who said, "*l'état c'est moi,*" delighted to talk, and would often slip away from wearying discussions on matters of State with Colbert or Turenne, to have a pleasant chat with his learned gardener, in whose favour and interest he created a new official appointment—that of Director-General of all the royal fruit gardens. The hours spent with La Quintinie in discussing the best methods of growing Peaches and Figs in the highest perfection were said to be the pleasantest moments of the royal leisure.

The fruit then served at the regal banquets was acknowledged to be the finest in Europe; and instead of furnishing forth useless quantities as formerly, when vast pyramids of Melons, Pears, Peaches, and Grapes were heaped upon the royal tables with barbaric profusion, only small and delicate baskets, furnished with the very choicest specimens, were to be seen—the honour to the gardener consisting in the simple fact that the baskets invariably went back to him empty. It is one of the honours of La Quintinie that Molière, in one of his plays, has alluded to the magnificence of his Melons. The King caused a spacious and comfortable house to be built expressly for his distinguished gardener, and when he died (in 1696) sent for his widow, and kindly taking her hand, said, "*Madame, nous venons tous les deux de faire une perte que nous ne pourrions jamais réparer.*" In addition to the gardens of Versailles, La Quintinie established the fruit and vegetable gardens of Chantilly, for the Prince of Condé; those of Rambouillet, for the Duke of Montpensier; those of St. Ouen, for M. de Boisfranc; those of the Château de Sceau, for the great Colbert; and those of Vaux, for the minister Fouquet.

His manuscripts were collected by his only surviving son, M. l'Abbé de la Quintinie, and published in a handsome volume soon after his death in 1696. It formed at the time an invaluable and complete code of all that was then known of the most advanced methods of horticulture, and was translated into nearly all the languages of Europe. The original portions of the work are highly valuable and instructive even at the present day; but some years after its first publication it became the prey of greedy booksellers, who, in order to increase its bulk and price by swelling it into two volumes, added a mass of nearly worthless matter which La Quintinie would never have acknowledged, and which was in fact quite unworthy of him.

In the last chapter of the original work the culture of Oranges is carefully treated of, and the author asserts that, with the application of the proper principles, success is much easier than is generally conceived. It is a chapter well worthy of study at the present time by would-be Orange-growers. Some of his paragraphs upon the useless multiplication of named varieties of fruits and vegetables then in general use are somewhat humorous, especially one concerning new kinds of Pears, of which he gives a long list, which he says are all very inferior to the old kinds, adding a second list of vaunted new sorts which he says are "so execrable that he implores his friends not to attempt to grow them." His list of the best Peaches then known is very copious, and he places above all, for exquisite texture and high flavour, *la petite Violette Hâtive.*

Santeul composed a Latin poem, entitled "Pomona," in honour of La Quintinie, in which are many lines that might vie in metre and poetic eloquence with the very best of modern Latin verse making; and Perrault, a member of the famous Académie, one of the "immortal forty," has left a French Idyll inspired by the great horticulturist which is very far from being without merit. The opening and the close of this little poem in honour of gardeners and gardening may be thus rendered in English, in which form, however, much of the terse neatness of the original has necessarily evaporated.

While some sing our warriors, with vaunting elation,
Whose reign is death's reign, and fair earth's desolation—
Grant me Muses! mid scenes of the soil's rich increase
To sing of the Hero of gardens,—and peace.

* * * * *

With the heaven-given light that shone down at thy birth,
Thou hast sought to enrich and embellish the earth,
And at last, by thy learned and elegant pen,
Hast transmitted thy art to new races of men.

PUBLIC GARDENS.

OUR NATIONAL HERBARIUM.

Will you, by giving to the public the accompanying rejected letter, permit me to secure through your pages an act of justice which has been denied me by one of your contemporaries? To make the letter intelligible I must give a short historical preface.

I had occasion to correct some errors in a statement made by Dr. Hooker published in *Nature.* My letter was written on the 2nd of December last. Its publication was delayed a week, and when it appeared there was appended to it a reply by Dr. Hooker, dated the 3rd of December, showing that my manuscript had been at once sent to Dr. Hooker to be dealt with. This reply contained statements which a careless reader might suppose went to show that I was mistaken. I set the matter right in a reply I wrote on the 16th of December, the proof of which, besides being sent to me, was sent to *one* whose adverse criticism induced Mr. Norman Lockyer, the editor of *Nature,* to refuse its publication. I protested against this, and showed how erroneous the criticism was; this remonstrance compelled Mr. Lockyer to give up the criticism as a ground for refusing me justice, and to assume to himself the responsibility for thus acting. The reasons he then gave showed a complete misapprehension on his part of the matters in dispute; but the last and strongest of them was of a kind that I can only venture to put before your readers in the words of Mr. Lockyer himself: "I cannot lend myself to appear to question the truth of a statement made by a man of science of Dr. Hooker's eminence." This was of course final. I had not attained to sufficient eminence in science to secure me from error; my statements are called in question by Dr. Hooker in the pages of *Nature*; and I ought to have nothing to complain of.

Every week the printed letters in *Nature* are prefixed by the statement, "the editor does not hold himself responsible for opinions expressed by his correspondents;" and in his letters to me he claims for himself "fairness and plain-dealing." Nevertheless, while rejecting my courteously worded letter (the proof of which I enclose) he has, in recent numbers of his periodical, permitted two of his correspondents to make offensive mis-statements affecting the botanical department of the British Museum, which of course remain unquestioned as far as I am concerned.

British Museum, March 17. Wm. Carruthers.

The following is the rejected letter referred to by Mr. Carruthers:—

To the Editor of "Nature."

Dr. Hooker is mistaken when he says* I implied that he suggested the supplying the British Museum with "worthless duplicates" from Kew. These words are plainly my own estimate of the materials which, in the scheme of Dr. Hooker, are intended to constitute the London Herbarium; and I maintain that the duplicates would be worthless to the Kew collection, else they would not be parted with, and they would also be worthless for any uses in scientific botany when forming the only materials of a herbarium at the Natural History Museum at Kensington. Anyone wanting information, whether "geologist, botanist, amateur, or other resident in London," must have parted with his senses if he stopped at Kensington to consult the *rejectamenta* of Kew, placed by a subordinate as easily as "putting books on a shelf," retaining all the original errors in naming, and without any provision to prevent the continual increase of such errors necessarily resulting from the progress of scientific knowledge, and did not continue his journey five miles farther to the "great scientific working herbarium to which all botanists should come."

Dr. Hooker is equally mistaken in saying that I state that none of the collections distributed at Kew have been sent to the British Museum. I definitely spoke of the "collections made at the expense of the British Government;" and my statement is absolutely correct. The only set of plants received here from Kew since 1853, when it was set up as a rival to the British Museum (excluding, of course, the "Erebus" plants, the distribution of which began in 1845, and private collections which have been purchased from their owners) is the very valuable series of Hooker and Thomson's Indian plants, amounting to 6,966 species, which were presented in the names of these two gentlemen, and for which they were thanked as the different instalments were delivered. Dr. Hooker's complaint at not receiving duplicates in return for this gift has some foundation, but it is strange that, as far as I know, this is the first time he has ever expressed a wish to have any of our duplicates. My assertion, and my complaint too, is, that of the collections of plants made at the national expense, and distributed from Kew, not a single set has been sent to the National Herbarium, though sets of all of them should have come here not as a gift, like the plants of Hooker and Thomson, but as a right.

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* Nature, Vol. VI., p. 103; Dec. 12, 1872.

I have again read over the official report of Sir Wm. Hooker for 1853, and am satisfied that the use I made of the extract is justified. On the other hand, I can find no statement to the effect that the work of the Garden had been carried on ever since Sir Wm. Hooker became director by means of his own private herbarium, nor any of the qualifications as to time, &c., given in Dr. Hooker's letter. It is a remarkable corroboration of my view of the case that, when Sir Wm. Hooker himself first offered his herbarium and library to Government, the then First Commissioner of Works refused the offer, on the specific ground "that the application of a Hortus Siccus and library to the naming of the new plants received at Kew had been effectually and satisfactorily performed through the Botanical Department and Library of the British Museum."

The statement made by Dr. Hooker that a large Herbarium was in constant use at Kew in the time of the Aitons, opposed as it is to Sir Wm. Hooker's repeated declarations as I read them, and certainly to the documentary evidence I published in your last issue, as well as to reliable information which I possess regarding the state of Kew at the time referred to, if persisted in, should be substantiated by evidence.

I may add that I have been drawn into this correspondence, and will, if necessary, continue it, only from a sense of my duty as Keeper of the National Herbarium here. Wm. Carruthers.

British Museum, Dec. 16.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Conservatories.—Indoor plants, though backward this spring, on account of want of sunshine, are, nevertheless, now starting freely into growth, and must, therefore, be encouraged. Deciduous shrubs and climbers still unpruned must now receive that attention, in order to prevent unshapely growth; and all evergreen shrubs may yet be safely pruned, and, if necessary, transplanted or repotted. Stake plants in pots as requisite, bearing in mind, however, to use as few for that purpose as possible. As the young shoots lengthen, they should be tied out at once to the principal supports. In repotting carefully disentangle the outside roots, for plants shifted in a pot-bound condition never succeed satisfactorily. Good substantial loam, skimmed off the surface of a rich pasture, and stacked for twelve months previous to use, with alternate layers of manure, forms an excellent compost for most plants. Wash all sashes requiring that attention, paint any rafters or other wood or iron work that seems to need a coat of paint, and scrub off any confervæ or green slime that may collect on the stages. No dirty pots, too, should be used in potting, and the pots in which plants not to be shifted this spring are growing, should also be well washed, and the surface soil cleaned, and, if necessary, a fresh dressing applied. Newly-potted plants should be kept in the warmest corner of the house for a time, and excluded from cold draughts, but to plants in active growth plenty of air should be admitted, and abundance of water given. Maintain the gaiety of conservatories and other show houses by means of Hoteias, Spiræas, various sorts of Prunuses, Deutzias, Lilacs, Rhododendrons, Weigelas, and Roses, brought from forcing houses. Keep up a good succession of Hyacinths, Tulips, Narcissi, and Crocuses, and for late bloom remove some of the latest of these to a cool house or pit, with a north aspect. Introduce Mignonette from frames, and, if necessary, sow a fresh supply in pots for summer blooming. Rhodanthes are charming plants, both for summer and autumn decoration; therefore sow some at once in 4 and 6-inch pots, or in pans, and, when ready, prick the young plants out into pots, keeping them near the light, and pinching them at the third joint.

Forcing Houses.—These when not wanted for flower forcing may be usefully employed for Cucumber growing. At present, however, keep them supplied with successions of Lilacs, Spiræas, Deutzias, and similar plants. Cuttings of Coleus struck early should be potted as they require it, pinched at the third joint, and the plants should be kept near the light. Iresines form attractive summer objects in conservatories, therefore treat them like Coleuses. The general stock of Begonias should now be potted and started into growth. Caladiums started in small pots should be shifted into larger ones before their roots become entangled. Continue to force Lily of the Valley, place the plants that have been forced under the stages of the greenhouse for a time, and after that plant them out, where, if they are well cared for, they will in two years make good plants for forcing again. Some plants of Lilium auratum should be introduced to this house for blooming in May. In making up baskets for suspending in the conservatory keep them in the forcing house until they are in active growth, when they may be gradually hardened off, so as to withstand the cooler temperature to which they are to be subjected. Bring on plants of Dendrobium nobile where an early bloom is required, and place those for late use in the greenhouse. Keep up a young and healthy stock of Fuchsias, Heliotropes, Petunias, Balsams, Cockscombs, Hebecliniums, Callas, Schizanthuses, and other plants for early blooming; those treated more hardily flower later.

Stoves.—Young and tender growth must now be protected from bright sunshine, especially when the leaves are damp. Put a few neat stakes amongst the leaves of the earliest started Caladiums to keep them from getting broken. Keep the young stock of Palms, Cycads, Dracænas, Ixoras, Crotons, Pavettas, &c., in a warm moist temperature; and, if a brisk bottom heat can be given them, so much the better, as in that case the plants start more freely into growth, and develope their foliage in greater perfection than they otherwise would do. Repot the stock of Alocasias. Plants belonging to the macrorhiza section of that genus like a good substantial loamy compost; whereas those belonging to metallica delight in an open turfy soil. They like plenty of water, both at the root and in the atmosphere; indeed, A. metallica and Marantas would thrive set on inverted pots in an aquarium—*i.e.*, if the bases of the pots were just above the water. Cyanophyllums, Sphærogynes, and Medinillas also enjoy a similar position, and the large and magnificent foliage they produce under such circumstances amply repays any attention they may receive in that way. Put some Tradescantias of the discolor section in 4 and 6-inch pots, and keep them for a time in a brisk moist temperature, when they will make excellent flowering plants. Start Clerodendrons of the fallax, fragrans, and Kæmpferi section, and give the climbing ones plenty of string to support their growing shoots. As soon as Crinums have done flowering, repot them in a good substantial loam mixed with some well-decomposed manure. They may be bloomed in the same pot for two or three years in succession if the specimens are large; but, in that case, manure water must be given them. Centradenias make useful winter plants, if propagated from cuttings now, and well attended to during the summer. Keep Brexias free from scale, and Ixoras from mealy bug. Allamandas must now be kept in active growth, A. nobilis, grandiflora, Hendersonii, cathartica, Schottii, and Aubletii, are amongst the best. Mocrgravia dubia is a useful plant; it will cover a stone or brick wall, grow on the wooden rafters on the north side of a stove, or make a nice covering for the stumps of tree Ferns; indeed the Marcgravia, dwarf climbing Ficuses, Æschynanthuses, and similar plants, thrive admirably in such situations. Cut back plants of Scutellaria Mcciniana, and pot and start them into growth. Cissus discolor, a plant which well deserves every encouragement, enjoys heat and moisture when growing, and it is rather partial to a slightly shaded nook. Cut back the old plant of it close to the main trunks or shoots, and induce them to start afresh. Divisions of the cut-away shoots strike freely, and form nice little plants for suspended baskets, or for pot trellises. Torenia asiatica, various sorts of Æschynanthus, Coccocypselum discolor, Panicum variegatum, Hoyas, Selaginellas, some Ferns, and Dracænas for centre-pieces are suitable for basket-work; but if a little extra shade can be afforded, many other plants, such as the beautifully-leaved Philodendron Lindenii, Pothos argyrea, different kinds of Cissus and Pitcher plants, may be effectively employed for the same purpose.

Kitchen Garden.—The value of trenching and ridging ground in winter has been made fully apparent this spring, for while plots that were dug only have been hardly workable, the ridged ground crumbled down like dust, and, indeed, it is upon such ground we depend for our early Cauliflowers, Lettuces, Peas, Potatoes, &c. Sow a little Salsafy, Scorzonera, and Skirret in lines about a foot apart; the first or second week of next month is the general time for sowing these; but in late localities they should be sown earlier. Of the three, Scorzonera is the greatest favourite. Sow a full crop of Savoys, Broccoli, and Brussels Sprouts; sow also some seeds of Asparagus in lines 18 inches apart; likewise successional crops of Radishes, and occasionally some Lettuces, both Cabbage and Cos kinds. Also plant out winter-raised or protected Lettuces between Cauliflower plants, or transplant a full crop over Seakale or Horse-radish plantations. Finish transplanting Onions, and, if not already done, sow the summer crop at once. Sow Round Spinach between rows of Peas, or, in some other places, in quantity sufficient to meet the demand; sow also some of the New Zealand Spinach in heat for a summer and early autumn crop; this variety often affords fine succulent leaves, when ordinary Spinach cannot be had. Of Carrots sow a full crop in deeply-trenched ground, which should get a good dressing of fresh air-slacked lime. Sow some small kinds of Turnip in lines a foot apart, or in beds 4 feet wide on warm, light soil. Earth up and stick Peas as they advance in growth; any exposed to cutting winds should have the assistance of a few evergreen branches to break its force. The following are first-rate sorts for sowing about this time, viz., Champion of England, Laxton's Prolific and Quality, Veitch's Perfection, Dixon's Favourite, M'Lean's Best of All, Prince of Wales, Wonderful, Fairbeard's Surprise, Victoria Marrow, Knight's Tall Marrow, British Queen, and Ne Plus Ultra. Transplant Cabbages as required. Lift, divide, and transplant pot herbs, and sow in a frame some for planting out in May or June.

NURSERIES.

Outdoor Department.—Now that the sale of deciduous trees is all but over, means should be taken to utilise the ground on which they stood. Let it be levelled and manured, and then line in younger plants, seedlings, and layers separated from last year's stools; lines about a foot apart are sufficient for the smaller kinds. The plants lifted between the end of October and now are commonly sized, and the smallest are laid in thickly in niches in any odd corner until now, when they are transplanted. Conifers and other evergreens may be transplanted until the end of May. The layering of deciduous trees should now be performed; last year's layers having been separated, dressed, and transplanted, the ground about the stools should be manured and dug, and shoots formed last season layered, at the same time cutting their points back to about 6 or 10 inches above ground. Autumn is the proper season for layering evergreens, and spring for layering deciduous trees. Of the latter the following are kinds most commonly propagated in this way, viz., Rheedia monostachya, Desmodium pendulifolium, Potentilla fruticosa, Cydonia japonica, Rhus Cotinus, Spiræas, different sorts of Berberis, Cornuses, deciduous Magnolias, Philadelphus, Deutzias, Syringas, Maples, Nuts, Planes, Brooms, Limes, Calycanthus, Paradise stocks, Ghent Azaleas, and others. Climbers and other plants in pots plunged out of doors are lifted, the protruding roots cut away, and the plants staked, potted, and tied neatly.

MARKET GARDENS.

Now that bright weather has set in, crops which have hitherto been somewhat backward are beginning to start into active growth. In the last week of March last year, good Asparagus was cut from the open field, but this year growers do not expect to cut any before the 1st of May. This will reduce the Asparagus season to some six or seven weeks' duration, whereas it usually lasts for more than two months. Sow some Asparagus seeds in lines 18 inches apart in the open ground, or in rows between Moss Roses, small fruit bushes, or in any convenient place not too much in the shade. The end of April will be quite early enough for transplanting last year's seedlings; a good plan is to sow a field of Radishes in 4-feet wide beds, with 1-foot wide alleys between them, and to plant the Asparagus roots in the alleys. Beet-root is also a good crop to sow on the beds instead of Radishes. Asparagus ridges should now be earthed up as speedily as possible, an operation about three weeks later this season than it was last year. Radishes, according to demand and ground at convenience, should be sown either on unprotected beds or with the usual covering of litter. Radishes were plentiful this time last year, whereas the earliest crop this year will take a short time yet before it is fit for use. Sow some French Beans in rows in frames; steeping the seeds some hours previously to committing them to the soil greatly assists their early vegetation. Sow Parsley along with Radishes on beds, so that when the Radishes are removed the Parsley may occupy the ground. Sow some Seakale seeds, if seedlings are preferred to root cuttings; but for general purposes the latter are the best, for they produce good plants in one year, whereas seedlings require starving the first year and growing the second, thus occupying a period of two years. Seedlings of Seakale may be grown into large plants the first year, but their tendency to "run" when so treated renders it necessary to starve them by sowing thickly and allowing them to remain in that state during the first year. Transplant Lettuces on every available space, and sow some seeds of the white Paris Cos. Sow large patches of round Spinach, remove for market what is usable of the winter crop, and turn up the ground for Beet or Carrots. For these root crops deeply-trenched ground is best, and, if already rich enough, do not manure it at present, for manure is apt to produce forked roots. Onions may still be transplanted, and any Potatoes yet unplanted should be committed to the ground at once. Thoroughly clean the surface of Mint beds, and strew some soil from the intervening alleys over them. Mint forcing may be discontinued, for a supply can now be obtained from the open ground; the roots used in forcing, however, may be transplanted in some damp, shady portion of the ground, and in two years they will have quite recruited their vigour. Cucumber growing must now receive attention. Pits which ought to be 5 feet wide and 3 feet deep should be dug out for them and filled with litter; the frames and soil should be got ready, and the plants transplanted when the heat has acquired the proper temperature.

THE HOUSEHOLD.

OKRA.

(HIBISCUS ESCULENTUS.)

This West Indian annual is grown for the sake of its pods, which in a green state may be used in soups or boiled and served like Asparagus; it is considered very delicious, and should certainly be more generally tried in England. The ripe seeds have been used as a substitute for coffee. It may be raised on heat in February or March, and planted out in June, or sown out of doors in May, in a warm sheltered spot; thin or plant out to 9 inches apart, keep clear of weeds, and earth up a little to support the stems; the pods should be gathered while quite young and tender. Messrs. Hooper, of Covent Garden, to whom we are indebted for so many rare and novel plants, figure it in their catalogue. So far as we have observed, the plant rarely comes to perfection in our houses, and the climate is probably too cool for its development out-of-doors, though in Sussex, where the Capsicum is sometimes ripened on warm borders, the Okra might succeed. In gardens in the United States this is a common vegetable, and is by many greatly esteemed. H. R.

Hibiscus esculentus.

Button-Hole Bouquets.—Few seem to understand the difference between a button-hole flower and a button-hole bouquet, yet it is very great. The button-hole flower should be, as the word signifies, a flower, meaning a single one; whereas a bouquet means a number of flowers arranged together according to taste. Having, I hope, explained clearly the difference between the two, I shall endeavour to point out what constitutes a nice arrangement for button-holes. Flowers selected for mounting singly should be very choice; in fact, whatever flower is chosen should be a specimen in itself. One of our prettiest coat flowers is a white or pink Moss Rose; this I like to see with merely a leaf belonging to itself behind, and not Ferns, as one constantly sees in florists' shops. Ferns, to my mind, are better suited for Orchids, Gardenias, &c., than for Roses. An Orchid nicely arranged in the centre of a frond of maidenhair looks well, the delicate Fern setting off the Orchid to perfection; in short Ferns of this class are better suited to go with indoor than with outdoor flowers. Bouquets generally consist of three or more different kinds of whatever flowers may be in season, and a little Fern mixed through them. A little bouquet before me is composed of a half open white Camellia-bud, sprays of Lily of the Valley, and a few pips of a white Hyacinth, with a little Fern mixed through the whole. A great fault too often seen in button-hole bouquets is their large size and the way in which the flowers seemed packed, as it were, together; a few common hardy ones, if lightly placed, look often far better than tender flowers badly arranged.—A. H., *Upper Norwood.*

NOTES OF THE WEEK.

—— At the Special General Meeting of the Royal Horticultural Society, held at South Kensington on Wednesday last, the new bye-laws, framed chiefly for the purpose of enabling the Council to resign in a body, were confirmed by a large majority. The present members of Council will therefore now only hold office until a new Council has been elected; and we learn that it is proposed to hold a special meeting for that purpose, on Friday the 4th of April. This decision was arrived at after a stormy and excited meeting, which lasted nearly three hours.

—— Asparagus was cut last year in the London market gardens in the last week in March; this season it is not expected to be fit for cutting before the beginning of May. Of March Radishes, too, we have none; indeed, April will be well advanced before the first outdoor crop is ready for use. Winter Spinach has been, in many places, a partial failure, and that sown this spring has as yet made small progress. The season, in short, may be said to be from three weeks to a month later this year than usual.

—— A batch of Clematises was shown the other day by Mr. Noble, of Sunningdale, in such a lovely condition as to fully prove their value for association with the most valued of early blooming plants for the greenhouse and conservatory. They were grown in a greenhouse temperature, and have been in flower since the middle of March.

—— Sulphuret of calcium dug in around the roots of Vines is considered to have a powerful effect in destroying Phylloxera. This gives rise to a true sulphuric acid, in consequence of the moisture of the soil and the gentle disengagement of carbonic acid. It serves also equally well to destroy caterpillars and other injurious insects which are frequently so difficult to remove from vegetation.

—— It is stated that Mr. Richard Smith, of Worcester, has presented, through Dr. Hooker, to the Chief Commissioner of her Majesty's Works, a valuable collection of species and varieties of Oaks, for the Arboretum of the Royal Gardens. The opinion expressed at Kew as to this collection is that, when arranged and planted, there will be no finer collection of such things in this country.

—— A Bostonian of magnificent possibilities wishes to organise a company with 12,000,000 dollars capital, to inclose a tract of several square miles in an immense glass structure, within which invalids may make their permanent abode, having a tropical climate, with its appropriate fruits and foliage, good hotels, picturesque drives, art galleries, an opera house—and, in short, everything that people in ill-health could possibly wish for.

—— The competition for the best design for laying out the new park at Lowestoft has resulted in the first prize being awarded to Mr. W. Clement Williams, of Halifax, and the second to Mr. George W. Usill, C.E., and Mr. J. W. Peggs, C.E., Westminster. The number of designs sent in was twenty-seven.

—— Statistics, pitiless as ever, inform us that 5,825,000 bouquets is the average sale of the Bonapartist Violet in Paris, amounting altogether to about £24,000.

—— The very fine Ficaria grandiflora, a plant very much resembling, but much larger than our well-known Lesser Celandine, was shown in fine condition at Regent's Park on last Wednesday. It is a native of France, perfectly hardy, has been in flower since February, and will no doubt become a popular border plant.

—— We have received from Messrs. Watts, of Northampton, some specimens of their white sprouting Broccoli, which, on being cooked, proved excellent. Not only the principal heads but the sprouts and even the young leaves that surround them are tender and well flavoured. Among sprouting Broccolies this must occupy a prominent place.

—— We have just received the schedule of prizes for the Great International Exhibition, to be held in the Alexandra Park, on the occasion of its being opened to the public on May 24th. There are seventy classes for flowering and ornamental stove, greenhouse, and hardy plants, some of which are open to all exhibitors, others to nurserymen only. In these classes the prizes offered are on an unusually liberal scale, the first for sixteen distinct stove and greenhouse plants in flower for amateurs is £30, the second £20, and the third £10; other prizes range from £20 to £2 for firsts, and from £10 to £1 for thirds. Eighteen classes are devoted to fruits, the first prizes in which range from £6 to £1. A space of ground is set apart for the exhibition of horticultural buildings and garden requisites, for which certificates and prizes will be awarded according to the discretion of the judges. A portion of the terraces will be set apart for trials of lawn mowers, for which £10 are to be awarded for the best horse machine and £5 for the best hand one. On the 31st of May and following days an exhibition of plants arranged for effect will be held in the Palace, for which £225 will be given in prizes; viz., to a group of one hundred plants, first prize £130, second £60, third £35. Intending exhibitors will be supplied with printed forms on application to Mr. Mackenzie, Alexandra Park, Muswell Hill, and which must be filled up and returned not later than the 17th of May.

—— It may be interesting to our readers to learn that woods and plantations occupy in England 1,325,675 acres, in Wales 126,823 acres, and in Scotland 734,490 acres, being about 1-28th of the total area of the United Kingdom.

—— Primula purpurea, a Himalayan Primrose, is just now coming into bloom at Heatherbank. The flowers are much larger than those of P. denticulata, and of a deeper and better colour. The plant is in peat on rock-work.

—— The estate of Hannahfield, near Dumfries, which in consequence of the failure of heirs lately fell to the Crown, has just been handed over by the Lords of the Treasury to that town, and among other things arising out of the gift is the maintenance of a portion of the estate as a public park. The property, which is believed to be worth £20,000, is beautifully situated about half a mile to the south of Dumfries, and includes a mansion house, ornamental grounds, and a large expanse of grazing land skirting the left bank of the River Nith.

—— It is a curious fact (remarks the *Graphic*) that the Drapers' Company have for some years been indulging in the luxury of a garden within a stone's throw of the Bank of England, at a cost of at least £12,000 per annum. Such is, indeed, the necessary inference from the announcement that there are negotiations in progress for letting the garden in question for building purposes at something more than that rent. Of course, if this garden were an ornament to London, we should have nothing to do but to praise the drapers for their past munificence, and regret that circumstances have now compelled them to exchange flower-beds for bricks and mortar; but the drapers' garden has always been studiously shrouded from the public gaze, and probably few of the busy thousands who daily traverse Throgmorton Street have even suspected its existence.

—— A correspondent of the *Times* relates the following case in reference to the Small Birds Protection Act.—"I was in hopes (he says) that the Act would rid our suburban fields of bird-catchers. Judge of my surprise and annoyance, then, when I saw this morning in a field adjoining my house the same old familiar sight which has pained me so often—a bird-catcher fellow, with all his apparatus in full work. Thinking myself fully armed with authority to order him off, I went out and called to him to desist, reminding him of the new law. He refused to do so, and when I threatened to bring a policeman, he coolly replied, 'The Bobby ain't no use; I've got the hact of Parliament;' and he pulled a copy out of his pocket and flourished it at me, shouting at the same time, 'I'm a catchin' linnets and chaffinches, as isn't mentioned in the hact.' So I was obliged to retire discomfited, and the bird-destroyer remained master of the situation."

—— The new Park rules are as follows:—"No public address shall be delivered, except in the open part of the park which is bounded by the horse-ride running from the Marble Arch to Victoria Gate, and thence to the powder magazine, and by the carriage drive running from the powder magazine along the Serpentine to Hyde Park Corner, and thence to the Marble Arch; and no such address shall be delivered in any place where the assemblage of persons to hear the same may cause obstruction to the use of any road or walk by the public, or to the use of the park by the military or volunteers, or to the use of the park under any of the reservations contained in the Act; and no such obstruction shall be wilfully caused by any person forming part of any assemblage which may have met to hear any such address. No public address of an unlawful character, or for an unlawful purpose, may be delivered. No assembly of persons is permitted in the park unless conducted in a decent and orderly manner."

—— The correspondent of the *Globe*, who stated that the Shamrock as worn at present is not an ancient emblem in Ireland, is said to be wrong; but is reported to be quite right when he says that it is not the plant spoken of by early English writers as having been used as food in that country, after the devastation caused by the wars of the sixteenth century. He is also considered to be correct in his conjecture that the Wood Sorrel was the plant meant by them. The Irish name of the Wood Sorrel is *shamsog*, which, by persons imperfectly acquainted with the language, might easily be confounded with the name of the Shamrock, if they judged by the ear, more especially if they judged by the eye, as S and R have nearly the same form in the Irish alphabet. Clearly "Shamrock," or, to give it its true orthography, *seamarog* (Trifolium minus), could never have been used for Wood Sorrel, except through ignorance, as *seamar* is the generic name of all the species of Trifolium, and could never have been applied to a plant so utterly different as Oxalis acetosella.

SOCIETIES, EXHIBITIONS, &c.

CRYSTAL PALACE.

(March 22 to April 5).

A grand exhibition of Hyacinths, Tulips, Narcissi, Crocuses, and other spring flowers—wholly supplied by Messrs. Downie, Laird, and Laing—now occupies the central transept of the Palace. Two long stages are devoted to these and other early-blooming plants, the whole being tastefully intermixed with Palms, Dracænas, and similar plants remarkable for the beauty of their foliage. Associated with these are also well-flowered Camellias and Azaleas, double-blossomed Chinese Peaches, Callas (with immense white, trumpet-like flowers), Dielytra spectabilis, Lily of the Valley, Mignonette, Pelargoniums, Spiræas, Chinese Primulas, &c. These are set, as it were, in an interesting frame-work of the graceful-looking bright-green Isolepis gracilis. The Hyacinths, which are numerous, are in admirable condition, their flower-heads being large and fine, and the colours rich and distinct. Amongst the dark blues, General Havelock still stands in the foremost rank, and King of the Blacks continues to be one of the best in its class. The fine azure-blue of Couronne de Celle will always render it a favourite; and, amongst red-flowered kinds, Macaulay occupies a prominent position. White flowers, always favourites with bouquet-makers, include Mont Blanc and Queen of the Netherlands, both fine kinds; whilst bright yellow is supplied by Ida. Of Tulips, Narcissi, and similar plants, there are also choice collections. Crocuses, too, shown in 4 and 6-inch pots, are smothered with flowers. Amongst the different subjects is likewise a large and interesting collection of one-year-old Cyclamens, variously coloured, the flowers having large, broad, blunt, and regularly-curved petals, whilst the foliage is vigorous and beautifully variegated. Altogether the exhibition is a very fine one in its way, and well worth inspection.

ROYAL BOTANIC SOCIETY.

(March 26th.)

Fine as the first spring shows held in the gardens of this Society usually are, none of them that we have seen equalled that which took place there on Wednesday last. Both sides of the new glass corridor connecting the entrance gate with the conservatory were lined with plants of the most lovely description, and many of them had even to be accommodated in the Conservatory itself. The weather, too, was delightful, the full sunshine setting off the brilliant colours of the flowers to advantage.

Stove and Greenhouse Plants.—For a dozen of these in flower in 12-inch pots, Mr. Ward of Leyton, and Mr. G. Wheeler, Regent's Park, competed, the former being first with some well-flowered Indian Azaleas, a good plant of Cytisus racemosus elegans, fine plants of Erica mutabilis, E. vernix coccinea, and E. Macnabiana; a graceful little plant of Boronia pinnata, a well-bloomed specimen of Eriostemon intermedium, a plant of Franciscea calycina with unusually robust foliage and large showy flowers, and fine specimens of Lycaste Skinneri, Dendrobium nobile, and Odontoglossum cristatum. From Mr. G. Wheeler and Messrs. Lane came hardy forced shrubs, consisting of Lilacs, Rhododendrons, Azalea sinensis and pontica, Guelder Roses, Andromedas, Prunuses, Spiræas, &c. Some well-flowered greenhouse Azaleas were exhibited in 12-inch pots by Mr. Ward and Mr. Wheeler.

Chinese Primulas.—For these there was a keen competition, and some groups were also shown for exhibition only. Messrs. Dobson & Sons had a fine collection, as had likewise Mr. James, of Isleworth, who showed some excellent plants of Princess Louise and Marquis of Lorne, the first a white and the second a red-flowered sort, both being improvements on the ordinary kinds. Mr. Little, of Twickenham, and Mr. Orsman, of Sutton, had also very fine groups.

Specimen Cinerarias.—Good groups of these were exhibited by Mr. James and Messrs. Dobson, who, in addition to those staged for competition, exhibited a miscellaneous collection of nicely-flowered plants. Amongst the finest were Lord Elgin, Orb of Day, Agrippa, Admiration, Formosa, and Snowflake.

Lily of the Valley.—Of this good examples were exhibited in pots, especially some from Mr. James, who was first with half a dozen superbly-grown plants, Mr. Reeves, of Acton, being second with another lot of well-flowered plants.

Hyacinths.—Those were altogether excellent; Messrs. Veitch & Sons staged a miscellaneous group of nearly eleven dozen of wonderfully fine plants. The same firm also gained the first prize for twelve sorts, with superb plants; the second prize group, belonging to Messrs. Cutbush, of Highgate, was likewise excellent. In the winning classes, L'Innocence, pure white, was very fine, as were also Prince Albert, an almost black kind, Von Schiller, Lord Byron, light blue, and gigantea. Mr. Douglas, of Loxford Hall, obtained the first prize in the amateurs' class; the second being won by Mr. Weir, The Elms, Hampstead; and the third by Mr. Withall, Addison Road, Kensington. La Grandesse, white; Prince of Wales, blue; and Koh-i-noor, red, were amongst the finest in this section.

Tulips.—Of these several groups were shown, all in wonderfully fine condition; indeed a better dozen than that exhibited by Messrs. Veitch could not well be found; those from Messrs. Cutbush, too, which gained the second prize, were also very fine. In the amateur class, Mr. Douglas, Mr. Rowe, and Mr. Weir were the successful competitors, each furnishing excellent exhibitions.

Cyclamens.—Those from Mr. Little's garden at Cambridge Park, Twickenham, and from Mr. James, of Isleworth, were extremely fine, some specimens having considerably over a hundred expanded flowers on them, all in the greatest possible perfection. Mr. Little had also a large miscellaneous collection of this charming spring flower; from Mr. James came a year-old specimen called Miss Innes, the flowers of which were white and violet, the individual petals about three-fourths of an inch in breadth, regularly recurved, and very blunt, altogether one of the finest Cyclamens in cultivation.

Hardy Flowering Plants.—Of these Mr. Ware exhibited a large and interesting collection in pots: amongst them were Iris persica and stylosa; Primula nivalis with masses of white flowers, P. elatior, acaulis, vulgaris auriculæflora, very fine, altaica, cortusoides, the yellow-flowered verticillata, erosa, and denticulata; blue and white varieties of Muscari botryoides; Scilla bifolia alba, S. sibirica, and S. Ughii, bearing a large umbel of showy blue flowers; Triteleia uniflora, Linum flavum, Sisyrinchium grandiflorum, Lachenalias, Dog's-tooth Violets, Crown Imperials, Tulipa Clusiana, Narcissus Bulbocodium, Funkias, and others. Dianthus barbatus atropurpureus, with large, dark, copper-coloured foliage so suitable for spring gardening, also came from Mr. Ware, as did likewise a plant of Aponogeton distachyon in flower in an inverted bell-glass. Of Ficaria grandiflora, with large, showy, yellow flowers and luxuriant foliage, a fine specimen was exhibited by Mr. Parker, of Tooting.

Miscellaneous Plants.—A collection of Camellias in small pots was exhibited by Messrs. Lane, and another by Mr. Wm. Paul, of Waltham Cross, who also showed several boxfuls of very fine cut blooms of Roses; also a Hybrid Perpetual called Abbé Bramerel, the flowers of which are very double and of a velvety dark-crimson colour. Mr. Paul showed, moreover, an extremely well-flowered group of Lachenalia tricolor. One of the most attractive features of the exhibition was a collection of Clematises in small pots, and profusely flowered, exhibited by Mr. Noble, of Sunningdale, all of which are well suited for early blooming and conservatory purposes, viz., Queen Guinevère, Lord Londesborough, Lady Londesborough, Lord Napier, Miss Bateman, and Albert Victor. A fine miscellaneous collection of plants was contributed by Mr. Williams, of Upper Holloway, which consisted of Palms, Ferns, Camellias, a specimen of Imantophyllum miniatum with eleven immense trusses of flowers, and other stove and greenhouse plants. From Mr. Wheeler came also a somewhat similar group. An Amaryllis named Thomas Bundy was sent by the Rev. J. Readon, Southampton. One of the most attractive features of the exhibition was a dozen and a half of specimen plants of Mignonette furnished by Messrs. Rollisson & Sons, of Tooting, the plants measuring 2½ feet in diameter and the same in height. From Messrs. Veitch & Sons came a group of new plants that have not previously received certificates from this Society. Amongst them were Maranta Makoyana, Dracæna imperialis, Asplenium longissimum, some Orchids, and a few other plants.

COVENT GARDEN MARKET.

March 28th.

Prices of Grapes range very high indeed, as do also those of forced Strawberries, Asparagus, and Green Peas. Of Easter Beurré Pears a fresh consignment has arrived from San Francisco, and large shipments of Apples from the United States.

Prices of Fruits.—Apples, per half sieve, 3s. to 5s.; Chestnuts, per bushel, 12s. to 20s.; Cobs, per lb., 2s. to 2s. 6d.; Grapes, hothouse, per lb., 15s. to 35s.; Lemons, per 100, 6s. to 10s.; Oranges, per 100, 4s. to 10s.; Pears, kitchen, per doz., 1s. to 3s.; dessert, per doz., 6s. to 18s.; Pine-Apples, per lb., 6s. to 10s.; Strawberries, per oz., 1s. to 2s.; Walnuts, per bushel, 15s. to 30s.; ditto, per 100, 2s. to 2s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 5s. to 10s.; French, 15s. to 30s.; Beans, Kidney, per 100, 2s. to 3s.; Beet, Red, per doz., 1s. to 3s.; Broccoli, per bundle, 9d. to 1s. 6d.; Cabbage, per doz., 1s. to 1s. 6d.; Carrots, per bunch, 6d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 2s. 6d. to 4s.; Cucumbers, each, 1s. 6d. to 3s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 2d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 3s. to 6s.; pickling, per quart, 6d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 5s. to 8s.; Potatoes, per bushel, 4s. to 7s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Savoys, per doz., 2s. to 3s.; Scorzonera, per bundle, 1s.; Seakale, per basket, 1s. to 2s.; Shallots, per lb., 3d.; Spinach, per bushel, 3s. 6d. to 5s.; Turnips, per bunch, 3d. to 6d.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

SPRING FLOWERS.

These have seldom been later or more welcome than they are this season. Not that the winter has been severe, but it has been wet and dull, and the sun, rather than a genial atmosphere, is the great opener of the eyes of the sleeping flowers, arousing millions of all colours to greet him. Again, a few sharp frosts do not keep back flowers so much as a series of slight freezings. The latter seem to vex and fret plants almost beyond endurance. Violets have suffered severely this spring, and in most parts of the country their flowers have been exceptionally scarce. That grand bold-stemmed Violet, the Czar, seems to have lost in hardiness what it has gained in length of stem and size of flowers, for I have had my blooms of it blackened again and again this year by frost, which has bitten deeper than usual on account of the earth being unusually moist. Aubrietias, Arabis, and Myosotis dissitiflora have also suffered much, the opening flowers having been repeatedly checked or nipped. I find, too, that the larger the patches the more, as a rule, the plants suffer, a circumstance for which I account in this way. The thick spread of leaves and branchlets entangles the rain and dew, and frost in consequence holds sway the longer; perhaps even till a gleam of sunlight hits them in a frozen state. Be that as it may, a safe rule in early spring gardening is, Small plants and many of them, if massive beds or rows are to be fully furnished without blanks. Hepaticas again, those brightest of spring flowers, are in many instances scant of bloom; and rabbits have delighted to make sport on their crowns full of flowers or otherwise. Alyssum saxatile looks in many cases rusty, as if the wet had pierced its floral heart, and left its trail-marks on its disfigured leaves. Primroses, on the contrary, seem to have enjoyed the dull rainy winter, and their charming heads of many-coloured flowers, resting on ample cushions of leaves, now form one of the chief features of our spring gardens, That bright blue-flowered plant, with which we are all so well acquainted, viz., Omphalodes verna, is also now in great beauty, and the flower-buds of the common Gentian are ready to burst with bloom. Snowdrops have been unusually fine and long-lived this year, the crimson one almost rising to the dignity of a tiny Lily in stature and size. The old single Snowdrop, however, still holds its place among our spring favourites. Crocuses, too, have been gay and fine, and Tulips, Hyacinths, Narcissus, Squills, Anemones, and Lilies are hastening on to carry the flush of spring beauty into the middle of summer. Some of these, such as Squills, some Narcissi, Anemone apennina, and others are already in flower, and the glorious old golden Daffodil is crowning in many a nook and corner the tender spring grass with a coronet of glory and proudly holding its own on spring bed or border, while in certain retired spots a far-reaching sea of golden heads is keeping time to the gentle breezes which we occasionally experience on these sunny April mornings. Daisies, red and white, are linked together in all sorts of combinations and quantities, calling up home memories, and cheering us up with hopeful gladness, as do also Polyanthuses, Auriculas, Heartsease, and Forget-me-Not, all of which help so much to sweeten and beautify the spring border or garden. F. T.

GROUPING EARLY FLOWERING TREES AND SHRUBS.

It is not a little singular that the passion for grouping that has characterised late years has almost wholly expended itself on half hardy flowers. It is but seldom that one meets with a tastefully grouped bed, garden, or border of hardy flowering plants, while groups of flowering trees and shrubs are still more rare. Many of the latter, however, would obviously gain much by being massed. The faults of most of our ornamental plantations and shrubberies are meagreness and monotony. The dotting style is largely responsible for the first; perpetual mixtures for the second. Massing is the way to breadth, richness, and intensity. One tree or shrub may be beautiful; three, six, twelve multiply the beauty, probably far beyond the ratio of the mere increase of numbers, as compound interest in the purse. The masses bulk out, fill the eye, and satisfy the mind. Each tree helps and is helped by its neighbour, many times. over. We rest and are satisfied by a certain type, colour, or form of beauty, and then pass on with new zest to others. The key to the secret that one garden refreshes and pleases, while another, of much smaller size, becomes tiresome before one gets half round it, is, that the last is a featureless mixture, the other a changing panorama of beauty, unfolding new features at every step. There are several general methods of grouping trees and shrubs, such as the pure, all of one sort; the mixed, on either of the two opposite principles of congruity or contrast; the botanical, in families; geographical, in countries; statural, in equal or graduated heights and size, &c. But, perhaps, simultaneity of flowering would prove one of the most interesting and novel principles of grouping. Early in the season, however, we have, unfortunately, a very limited choice of showy subjects. In February, for instance, we can hardly be said to have more than one tree, the Cornelian Cherry, and one or two shrubs, such as the Laurustinus, the Mezereon, and a few early plants of Berberis Bealii and Aquifolium, with possibly Rhododendron davuricum and a few Heaths; and the whole of these, with the exception of the Golden Cherry, depend so much upon the season that they may not be in flower till March. We may also have the small catkins of some of the Willows and Filberts. But this Cornelian Cherry is a grand thing, either singly or in groups, especially if backed up by dark Scotch Firs or other Pines, or set in front of sombre masses of Yew. How the dark foliage throws out the golden flowers! Then again, what an eye or centre we have in this Cherry for a group of early flowering trees, which may alike give and receive richness of colouring and effect from its fading glory. Supported with double-flowering scarlet, pink, and white Peaches and Almonds, Ribes sanguineum, Laurustinuses, Berberis, Daphne, Andromedas, and early flowering Heaths and Rhododendrons, a group may be formed a picture of the very spirit of the spring. What richness, purity, and variety of colour—what contrast of character and form—what variations of height we have in these few plants! The Heaths lighting up the turf with their glowing brightness, and the Peaches and Almonds rising to the height of oreven surmounting the Golden Cherry, while Ribes, Berberries, &c., mingle their scarlet and gold with an easy grace that results in the perfection of art. True, among a redundance of scarlet, white, pink, and gold, we lack blue to complete the colouring of the picture; but the missing link may be supplied in various ways. For instance, the base line may be filled in with the semi-glaucous variety of Juniperus Sabina prostrata, or the ground about the scarlet Heaths be cushioned with Myosotis dissitiflora, and the if possible yet more beautiful blue-flowered Omphalodes verna. Most of these trees and shrubs will flower in February or March, and even now, April 1st, the Cornelian Cherry is still arrayed in tarnished gold; while the Ribes, Laurustinus, and a few of the Berberries, Daphnes, Heaths, &c., are in full beauty. As the season advances we shall have more variety though hardly more beauty.

D. Bury.

In 1810 (says the *Antiquary*) an Oak was felled near Newport, in Monmouthshire, measuring 28½ feet in circumference. It was supposed to be 400 years old, from the number of rings in the grain; and it was stated at the time that the timber sold for £670 and the bark for £200. The "Parliament Oak" in Clipstone Park is, according to tradition, one under which Edward I. held a parliament, and is supposed to be 1,500 years old. At Welbeck Abbey an Oak called "The Duke's Walking-stick," is 112 feet high. The "Greendale Oak" covers a space of 700 square yards, and has a coach road cut through it. The "Two Porters" are 100 feet high; the "Seven Sisters" has seven stems 90 feet in height. There are some other extraordinary Oaks at Welbeck Abbey. The largest Oak in England is said to be at Calthorpe, in Yorkshire; it measures 78 feet in circumference where it meets the ground.

NOTES OF THE WEEK.

—— The Missouri papers record an act of munificence on the part of Mr. Shaw, an English settler at St. Louis, which, though happily not rare in this country, is almost unexampled in the United States. It is the free gift of a noble park to the inhabitants of St. Louis. The tract set apart for this purpose is situated close to the town, is richly wooded, and abounds in picturesque scenery. It covers an area of over 300 acres, and its value is estimated at about £100,000.

—— A list of Fellows, honorary, foreign, and corresponding Members of the Royal Horticultural Society, together with the Horticultural and Floral Societies in union with it, corrected up to the 1st of January this year, has just been published. To Fellows this list will be supplied on application to the Assistant Secretary for 1½d., post free, and to the public in general for 1s. 1½d. We have also received a copy of the "New Charter, Agreements, and Supplemental Agreement" of this Society.

—— The pretty spring-flowering Crocus, commonly known as Crocus Aucheri, is finely figured in this month's number of the *Botanical Magazine*, under the name of "Crocus Olivieri." Dr. Hooker's account of the plant, which fully establishes the propriety of the latter designation, is as follows:—"Originally detected in the Island of Scio, in the Levant, by the French Oriental traveller and botanist, Olivier. . . . Subsequently it was collected at Guenive, in Asia Minor, by Aucher Eloi, and described from thence as a new species by Boissier (C. Aucheri)."

—— The following species of Bamboo are stated by M. E. A. Carrière to be "very hardy" about Paris, viz: Bambusa viridi-glaucescens, violascens, aurea, mitis, nigra (perhaps a shade less hardy than the rest), Simonii, and Metake. These are the most interesting species grown in the neighbourhood of Paris and are mentioned in the order of individual merit. M. Carrière adds that except in unusually severe winters even B. aurea and B. nigra do not suffer in the least from the cold there, and that all the kinds grow best, according to his experience, in a cool sandy-clay soil.

—— We learn that the gold medal of the first class, offered by the Belgian Cercle d'Arboriculture for the finest collection of trained fruit trees, has just been awarded by the jury of the Great Exhibition at Ghent to Messrs. Baltet, Brothers, nurserymen and fruit growers at Troyes. M. Chas. Baltet is favourably known in the horticultural world as one of the most experienced arboriculturists of the present day, and the author of "L'Art de Greffer"—the best treatise on grafting and budding that has yet appeared in any language.

—— An authorised English edition of the "Art of Grafting," by M. Charles Baltet, of Troyes, profusely illustrated, will be published at the Garden Office in a few days.

—— On Saturday last a public meeting of noblemen and gentlemen who feel an interest in the adornment of the metropolis was held in Willis's Rooms, to consider a memorial to the Prime Minister for the appointment of what may be called a permanent committee of good taste to advise with the First Commissioner of Works upon all metropolitan improvements, so that they may be carried out with a due regard to the canons of good taste. Lord Lyttelton occupied the chair, and there were also present the Duke of Sutherland, Lord Vernon, Lord Elcho, Right Hon. Mr. Cowper Temple, Mr. Beresford Hope, M.P., Mr. B. Cochrane, M.P., and others.

—— We learn that very energetic steps are now being taken at Paris to restore the flower market in the Cité, which was formerly known as the Quai aux Fleurs, being situated on the river side in that (the most ancient) part of the city. The new market will be established on almost the same ground, between the Tribunal of Commerce and the new Hôtel-Dieu. Like the old one, it will form three parts or divisions. The first, or *plateau*, which will be wholly devoted to plants in pots, and cut flowers, will occupy the space just mentioned. The second will be on the quay itself, behind the Hôtel-Dieu, and will extend from Notre Dame bridge to the bridge d'Arcole. Here deciduous and evergreen shrubs, Rose trees, climbing plants, vegetables, &c., will be exposed for sale. The third division will commence at the bridge d'Arcole and terminate at the bridge de la Morgue. The whole of this space will be occupied by the larger-sized fruit, forest, and ornamental trees. We are informed from the same source that, in addition to the above, three other new flower markets have been almost as good as decided upon—viz., one in the Place de Clichy, Batignolles; another in the Faubourg Saint-Antoine (probably in the Place des Vosges); and the third in the Place de Jussieu. These, with those already in existence, will raise the number of Parisian flower markets to seven. The others are—(1) the Grand Marché, in the Cité, open on Wednesdays and Saturdays; (2) the Madeleine, open on Tuesdays and Fridays; (3) the Château-d'Eau, open on Thursdays; (4) the market in the Place Saint-Sulpice, open on Mondays and Thursdays; not to speak of the Marché Saint-Honoré, in which, in addition to a very large space devoted to cut flowers, bouquets, and plants in pots, much of the ground is occupied by a great variety of ornamental accessories for gardens and apartments, as well as of garden tools and utensils of every description. In reading the above, one cannot fail to be struck by the very forcible, and by no means flattering, contrast which London, so much superior to Paris in extent and in wealth, is still contented to present in the miserable accommodations afforded by its solitary recognised flower market in Covent Garden.

—— The Grass on the Thames Embankment has been attacked in a serious manner by the larvæ of the common daddy-long-legs, which seem to be unusually destructive this season. They will, however, soon be on the wing, when they will become food for birds.

—— Herr Eckstein, of Vienna, in an analysis of the comparative value of different disinfectants, concludes that chloride of lime is the cheapest and best, and advises that the substance be enclosed in a parchment bag, so that its effects may be slowly diffused through the polluted atmosphere.

—— We are glad to see that at length Tooting Beck Common, one of the finest of the open spaces within the metropolitan area, is to be added to those which are placed under the jurisdiction of the Metropolitan Board of Works, to be preserved for ever for the public use and enjoyment. It is reported to contain 144 acres, or thereabouts; one side of it lies contiguous to the common of Tooting Graveney, and there is to be no boundary fence between the two commons.

—— Mr. C. Bachhoffner, 4, Hatton Garden, has registered a mode of fixing flower glasses and vases to window sashes in such a way that the windows may be opened and shut without impediment. For conservatory use, or for affixing to shelves, stages, or similar projections, these brackets are equally applicable; they are furnished with clips and screws, which fasten them to whatever they may be attached, in the same way as pincushions may occasionally be seen fixed to the edges of work-tables.

—— The Tithe Commissioners in the Vicar of Gulval case have awarded that the sum of 1s. 6d. per acre shall be paid annually in respect of all lands now or hereafter to be cultivated as market gardens, and newly cultivated as such since the commutation of the tithes. This is below the lowest sum awarded in any other parish, which has varied from 6s. to 3s. 6d., per acre, and, therefore, the Vicar has determined to relinquish the award, not considering the amount to be sufficiently important to justify the trouble to receiver and payers of its collection.

—— The Queen paid her first visit to Victoria Park on Wednesday last, and was enthusiastically received.

—— We greatly regret to announce the death of the veteran and most amiable Nestor of American botanists, Dr. Torrey, of New York. He was superintendent of the Assay Office in Wall-street, and did a good deal of work besides botany. When in New York, in 1870, we were much indebted to him for kindly guidance and introductions, and had the pleasure of being present at one of his agreeable *réunions* of botanists and gardeners, which took place monthly in his rooms at Columbia College. American horticulture, as well as American botany, has benefited greatly by Dr. Torrey's labours. Torreya, a genus of Taxaceæ of North America and North-Eastern Asia, was named after him.

—— The great International Exhibition at Ghent has been, as might have been expected, in most respects quite a success, the grounds, which were tastefully laid out, being crowded with plants from nearly every country in Europe. In the class of twenty newly introduced plants in or out of bloom, the first prize was awarded to Messrs. Veitch, of Chelsea, who also received first and second prizes for the best new single plant in bloom, the first prize plant being Tillandsia Zahnii, a kind having pale green leaves beautifully striped with pink, canary coloured flowers and crimson bracts; the second being Masdevallia Harryana, a cool-house Orchid, to which allusion has often already been made in our columns. The handsome white-flowered deliciously scented Toxicophlæa spectabilis was also exhibited in this class by Mr. Williams, of the nurseries, Holloway, who showed, moreover, ten grand examples of Anæctochilus, for which he was deservedly awarded a gold medal. The same exhibitor also received a first prize for a magnificent collection of Cyclamens, which were the subjects of much admiration. For the best single plant not in flower, newly introduced into Europe, Messrs. Veitch were again first with Dracæna amabilis; and to the same firm was awarded the first prize for the best seedling Orchid obtained in Europe, the sort being the lovely Cypripedium Dominianum, a hybrid raised by Mr. Dominy between C. Pearcei and C. caudatum. Among others of our countrymen who were successful at this great continental trial of skill may be mentioned Mr. Maurice Young, who got a first prize for his Golden Juniper.

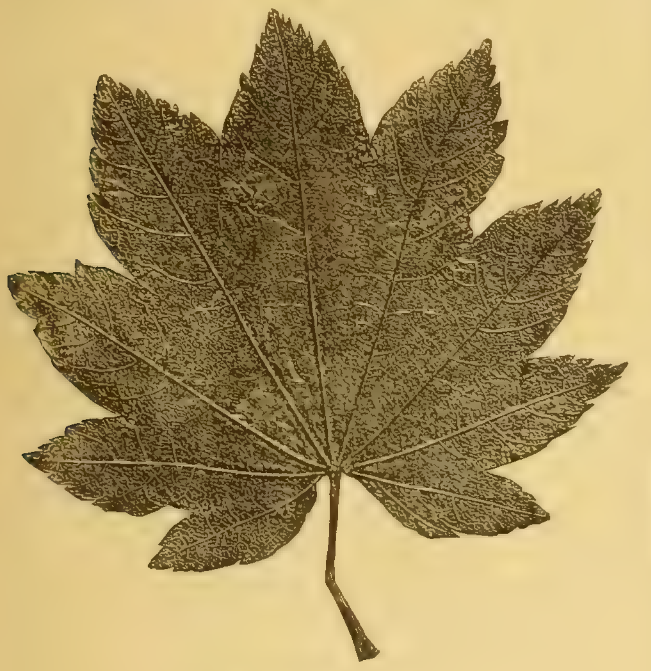
THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE ROUND-LEAVED MAPLE (ACER CIRCINNATUM).

THIS forms a beautiful round-headed tree from 20 to 30 feet high, with contorted spreading branches and slender smooth shoots, frequently tinged with red. It comes from the Rocky Mountains, where it is said to be exclusively confined to the wooded portions that skirt the banks of the Columbia river. It is also found plentifully in Northern California, and was first introduced from that quarter by Douglas in 1826. Its leaves are orbicular, more or less cordate at the base, set on rather short footstalks, and are from seven to nine lobed, with the openings not deep, but very acute. They are smooth on both surfaces, sharply serrated on the edges, pale reddish-green when first they begin to expand, but afterwards, when fully developed, bright green, and just before they fall in the autumn they assume a brilliant crimson colour. The lobes are ovate-pointed, sharply toothed on the margins, and, except the lower ones, nearly all of one size, and with the nerves all radiating from the top of the petiole to the tips of the lobes In the flowers the sepals are purple, and the petals, which are white, are produced in terminal, nodding, stalked corymbs in April and May. The keys or fruit are smooth, bright red when young, purplish-brown when ripe, and have the carpels thick and oblong, and the wings widely extended. This Maple makes a nice small tree for planting singly on lawns. The length of a full-sized leaf is $4\frac{1}{2}$ inches, including the footstalk, which is rather more than an inch long, and the breadth is $3\frac{1}{2}$ inches.



The Round-leaved Maple.

OSIERS.

I HAVE had an Osier ground for some years, and I find it to be profitable. The popular notion of an Osier bed is just any piece of land that won't grow anything else, where water stands all the winter, that you have only to dig over, push cuttings in, and take the crop off when the time comes round for that purpose. Osiers grown in this fashion will just cover expenses. To make them pay, the business must be well started, and the little that has to be done must be thoroughly done, and at the right time of the year. First shallow drain the land—say 18 inches or 2 feet, not deeper—with pipes; for Osiers live in dry, thrive in moist land, and die out in stagnant water. If you use hand labour instead of horse work in the draining, cut open drains and keep them clear; but, if possible, use horse work, as it will make a considerable difference in the expense. Trench the land 12 inches deep, plant the cuttings 12 inches apart, and 18 inches row from row. Cuttings made of one-year shoots are the best. They should be cut about 10 or 12 inches long, and pushed into the ground the whole length. If planted too late (after the sap has begun to rise), the bark will peel up the cutting, and it will die. February is the planting month. For the first year keep the weeds under with a sharp hoe, and also keep rabbits down, unless you grow only the bitter kinds, which are not quite so profitable. Don't cut the crop later than February, and replace any cuttings that may have died. Osiers are sold as a standing crop, or in some places by weight or by the bunch. Whichever plan is adopted, let your own men cut the crop. The Osiers should be cut off close to the ground, or as nearly so as practicable. A bunch of Osiers is a number of rods tied together by two bands (made of Osier). The lowest band should be 12 inches from the butt end of the bunch, and should measure 36 inches in circumference; the other band is put round any distance up the bunch, and has no fixed length, being intended only to keep the bunch together. As soon as the crop is cut and weeds begin to appear, plough the land and harrow it; for, if the weeds once gain a good footing, it will make a large difference in the yield. About six or eight sorts are enough to grow, and about three-fourths of them should be kinds for peeling, which fetch a better price than those that will not peel. As soon as the shoots burst, use the hoe, or you may damage the plants. Any land, however poor, will grow some kinds of Osier; but the better the soil the better the kind that may be planted. Clay is hardly suitable for them, and sand is almost as bad. The value of an Osier rod depends upon its toughness and straight length. An acre of land will take about 28,000 cuttings. The cheapest way is to grow a small bed the first year for cuttings for the next. A well grown one-year-old rod will make three cuttings —not more, safely. Bought cuttings cost about 12s. the thousand. The shape of an Osier ground is material; it should be long and comparatively narrow, with vacant paths every now and then running quite through it, to enable rabbits to be shot as they pass over them. In a large square piece of ground it is almost impossible to get rabbits out. If pheasants are near, they are sure to go to an Osier ground—partly for cover, and also for insects, which they find in abundance in such places.—W. T. C.

Catkins.—During the last few months there has been a deceptive greenness diffused over the hedges in consequence of the numbers of Hazel catkins which, in this part of Surrey, they contain. We fancied weeks ago that spring was come or very near, but were deceived. Hazel catkins are very numerous this season, hanging all over the bushes; they are of a light yellow-green, and if examined closely, each "lamb's tail," as it is sometimes called, will be found to be full of little bunches of yellow stamens, each bunch being protected by a green umbrella, as it were, from the wind and wet of February and March. Close beneath the hanging catkin grows the wonderful little nut-blossom. How small it is, yet how brilliant the crimson of the fertile flower on which the pollen of the stamens will drop and the Hazel-nut will grow! The catkins of the Willow, which we call Palm, are the most beautiful of all the catkin family. The stamens stand upright, and are of a brilliant golden colour; the fertile catkin grows on a separate bush, and is less pretty and interesting to look at than the other. I found the road strewn the other day under the Aspen Poplars with stout pink catkins. These were the barren flowers; the bunches of stamens were bright pink, shaded beneath little hairy hoods. This is the best time of year for observing the different kinds of catkins, borne by our half dozen native trees that produce them.—M. A. D.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Cedars. Dr. Brandis states, in a paper read before the British Association for the Advancement of Science, that the Cedars of the Himalayas, of Lebanon, of Taurus and of Atlas, have all sprung from one original form, and are therefore but fixed varieties one of another.

The Californian Laurel.—I can inform "W. F." (page 189) that Tetranthera californica, commonly called Laurus regalis, is perfectly hardy in this part of England, in fact more hardy than the Sweet Bay, L. nobilis. Here it forms a large shrub, and will soon be in bloom.—H. N. ELLACOMBE, *Bitton Vicarage, Gloucestershire.*

Churchyard Planting.—I should be glad to learn what deciduous and evergreen shrubs and trees are best adapted for a much shaded churchyard in the heart of a smoky town. The idea is to produce an ornamental and garden-like appearance, and to do a little "bedding out" in the summer months. The soil is rich and loamy, and the surrounding walls hideous.—A CHURCHWARDEN, *Lincolnshire.*

Chamæcyparis Lawsoniana cærulescens.—This is a dwarf bushy plant, resembling Biota compacta in habit. It grows from $2\frac{1}{2}$ to 3 feet high, the numerous and much sub-divided branches forming a broad spherical head, nearly $1\frac{1}{2}$ foot across. The leaves are of a bluish or glaucous green, marked, especially on the under surface, with whitish or silvery grey bands. The appearance of this plant is of the most ornamental and pleasing description.

THE FLOWER GARDEN.

THE POLYANTHUS.

The Polyanthus is a charming spring-flowering plant, succeeding the Crocus and the Snowdrop, and forming a capital companion to that popular flower so closely related to it—the Primrose. It is perfectly hardy, but is somewhat impatient of cold and damp situations where there is a stagnant moisture in the soil; whilst, at the same time, it should not occupy too dry a spot, or it is in danger of being roasted up during a hot summer. During the past few years much has been done in the way of obtaining Polyanthuses that combine to some extent the rich and handsome lacing of gold that the old florists used to value so highly in the flowers with the robust constitution and sturdy habit of growth characteristic of the commonest border varieties. This is a great gain, and no one can look upon a clump of Polyanthuses with their handsome gilded flowers, without being struck with their rare beauty, and with a desire to cultivate them.

There are two ways of obtaining a stock of Polyanthuses—by division of the roots, and by raising plants from seeds. The seed can be sown in autumn or spring, or in fact at almost any season. My favourite plan is to sow in autumn in a shallow box or in pans, using some fine rich soil, and only just covering the seed with the same. If the box or pans be placed in a greenhouse, selecting a shady, cool part, or in a cool frame, the seed will grow readily, and by April of the following year they can be stood out under a shady wall, and should be kept well watered during the summer. By the first week in September the plants will be very strong, and if planted out in beds or on borders during moist weather, will make strong roots in the soil, and the following spring yield an abundance of flowers. It is of the first importance that strong plants be put out in order to secure a fine head of bloom. A bed of seedling Polyanthuses is always an object of considerable interest, and when grown in beds the mass of flowers thereby obtained enables one to appreciate their beauty more highly.

A deep yellow or black sandy loam, resting on a cool and moist subsoil, is the one to grow Polyanthuses in to perfection. Into such a soil they strike root deeply, and can withstand a long drought. On a heavy clay soil the Polyanthus does not flourish generally; the rootlets soon decay. The north or east side of a wall or fence, where the plants will get only the morning sun, is the aspect most favourable to their well-doing, and capable of prolonging to the utmost limit the beauty of the flowers. Where it is requisite, a compost should be formed in which to grow the plants; it should be compounded of good turfy loam, well-rotted cow-dung, so dry that it will readily crumble to pieces, and some leaf-mould, and laid on the bed to the depth of 9 inches. One great secret of success is undoubtedly deep planting. This is a principle that has always been insisted on by the most celebrated Polyanthus cultivators. The *modus operandi* of planting they observed was, in making the hole ready for the reception of the plant, to raise the soil up in the centre in the form of a cone, and then spread out the roots upon it, so that the plant itself should rest as it were upon the top of the cone. Then the foliage was gathered up, and the soil filled in around the roots up to quite one inch above the collar of the plant, *i. e.*, the point at which the leaves spring from the roots. During the growing season the Polyanthus throws out many young rootlets just below the surface of the soil, and the advantage derived from deep planting is that the best rootlets growing from the top part of the tap root derive more nourishment from the soil, and are more secure from drought in summer and frosts in winter. Frequent stirrings of the soil, top-dressing with fresh soil, and watering when required, are great helps towards the full development of the plants. When division of the roots is attempted, they should not be cut with a knife, but carefully torn asunder with the finger and thumb. According to the size of a plant will it divide into a number of plants, and each separate growth will be found to have roots attaching to it. When dividing, all old and decayed roots should be cut away. I strongly advise all fanciers of the Polyanthus to grow a few seedlings annually, as they make the strongest plants, and, when the seed is carefully selected, the quality of the flowers can be perpetuated as certainly as in the case of divided plants. I am treating in this paper of the gold-laced varieties. In selecting flowers from which to obtain seeds, let size and regularity of the lacing of gold on the edges be regarded. Pin-eyed flowers, as they are termed—*i. e.*, those in which the pistil protrudes itself from the throat of the flower—should be rejected, unless possessing some distinctive quality worthy of preservation, as they look unsightly. R. D.

NEW, RARE, OR NEGLECTED ALPINE PLANTS.

BY J. C. NIVEN, BOTANIC GARDENS, HULL.

(*Continued from p. 244.*)

Orobus hirsutus is a distinct and desirable dwarf species, growing about 9 inches high. It has somewhat broad leaflets of a light green colour, and lively blue and rose-coloured flowers. It grows freely.

Orobus lathyroides, though too tall in growth for association with the more truly alpine plants, is a lovely border plant. Its height, when growing vigorously, is from 18 inches to 2 feet; its flowers bright blue, produced in dense racemes, and its general habit all that can be desired; it is increased freely by seeds, which it produces abundantly. We have received it from continental gardens under the name of Vicia unijuga.

Ourisia coccinea.—A dwarf Scrophulariaceous plant, producing racemes of crimson flowers. Is a plant of recent introduction, and has a good habit, though, as we have found it, somewhat shy in blooming. A native of the Andes.

Oxalis lasiandra is nearly, if not altogether hardy, with long, narrow, deflexed leaflets, and the flower-stems rising 9 inches or 12 inches high; produces crimson flowers of considerable beauty.

Oxalis lobata is often grown under the synonym of O. granulata; it is well worth growing in pots for greenhouse decoration, as it produces its bright yellow flowers in November, a period of the year when such a colour, other than among the Chrysanthemums, is of rare occurrence.

Orobus vicioides pleno is a double form, a good deal like O. vernus in habit, but a more compact grower, and like all double flowers, retaining its beauty for a long period. Well worthy of cultivation.

O. tauricus and aurantiacus.—Nearly allied species; both have orange-coloured flowers, and require to be well established plants before they will bloom freely, and be seen in perfection.

Oxytropis uralensis.—A dwarf compact species from the Ural Mountains; its leaves are more or less white, owing to closely adpressed hairs; its flowers are produced in compact heads, rising about 4 inches high; they are of a rosy blue colour, and exceedingly attractive. No collection should be without this plant. Closely allied to it, and similar in size and growth, is a species I have grown for years, and provisionally named Oxytropis cyanea; the flowers are larger and of a lovely amethyst blue. My original plant has now been growing in a pot for fifteen years, and blooms freely every season; it is, however, very shy to increase otherwise than by seed, the production of which is very exceptional.

Papaver spicatum.—In the way of P. pilosum, but more woolly in the leaf, and more compact in growth, owing to the shorter peduncles; is well adapted for rockwork; its flowers are of an exceedingly delicate texture, and of a yellowish orange. The plant grows about 18 inches high.

Polemonium humile is a dwarf species, with small circular leaflets, and the whole plant covered with pubescence; the flowers are of a slaty blue, produced on short foot-stalks; the general appearance of the plant recommends itself for cultivation, more, perhaps, than the flowers themselves.

Phlox nivalis.—A species now rarely met with in cultivation; much smaller in leaf and more rigid in habit than Phlox subulata; flowers are pure white; doubtless it and subulata constitute the origin of the pink-eyed Phlox Nelsoni; this origin appears to me to be well indicated by the shorter leaves and the white flowers—characters which it obtains from P. nivalis.

Phlox frondosa.—Belongs to the same section as subulata and setacea; but is a stronger and freer grower than either, with larger flowers; admirably adapted for such a position as will enable it to trail its procumbent branches over the face of a mass of rock.

Pinguicula lutea.—With yellow blossoms; is a native of the Southern States of America, and ought to have a very sheltered corner; its association with the large blue P. grandiflora would have a very pretty effect, but it is rare in cultivation.

Potentilla argentea, as the name would imply, is covered over with silvery down; it is of a creeping habit, not exceeding 6 inches in height; and though scarcely definite enough in its argent character to give it a status in the gaudy ranks of the flower garden, it is yet a very desirable plant to place as a variety among dark-leaved plants in a rockery.

Primula auriculata is closely allied to P. farinosa in outward appearance, but has larger flowers—and, indeed, is altogether of a more vigorous habit.

Prunella grandiflora var. **laciniata** is a very distinct variety, producing, along with the large flowers of the parent species, leaves divided into linear lobes. It is considered by some to possess sufficient character to render it specifically distinct; but as I have observed a tendency in seedlings raised from it to revert to the normal type, I retain it as a variety, and a very distinct one, of grandiflora.

Pulmonaria sibirica and **Pulmonaria angustifolia** are both perfectly distinct species from P. officinalis. The former has the leaves beautifully mottled with white—so much so as to render it worthy of cultivation for its foliage only. The latter has narrow leaves, and both form dense crowns, from which the flowery branches arise in dense masses to a height of 9 to 12 inches.

Saponaria cæspitosa is a far superior species to S. ocymoides, not so rambling in growth, but producing much larger flowers, of a warm rosy pink. It forms a thick, woody root-stock; and, when once fairly established, makes a permanent and valuable rock-plant. It likes a good strong soil, but free from damp.

Saxifraga longifolia var. **elatior** was for years grown as the true type of longifolia. This form bears some resemblance to ligulata, but is perfectly distinct when in flower, the panicle rising to 2 and even 3 feet high, somewhat lax in the arrangement of the flowers, but the individual flowers are double the size of those of S. ligulata, and beautifully dotted with tiny crimson spots; a plant known as Saxifraga nepalensis is doubtless this old form of longifolia under a new name.

Saxifraga mutata.—A yellow-flowered species bearing considerable similitude to S. ligulata; its flowery panicle is about 18 inches high, and I presume it is rarely seen in cultivation, owing to the fact that it not infrequently exhausts all its vigour in producing blooms, and rarely matures seeds in this country; further, it does not produce offsets, as most of this section do. It is a native of the Alps, but limited in its distribution.

Saxifraga pentadactylis is the most rigid of all the mossy section, dwarf and compact in habit; it has a further peculiarity of exuding a gummy secretion, in the form of a white powder, that gives the plant (especially in spring) the appearance of frosted silver. In this respect it is allied to S. ladanifera, but in the latter the exudation is brown-coloured. It produces pure white flowers, and ought to find a place in every collection of this extensive genus.

Scutellaria macrantha, a native of Siberia, is the finest of all the species of this genus; it forms a hard woody rootstock, and is an excellent perennial alpine plant; it grows 9 inches high, producing an abundance of rich velvety dark blue flowers, much finer in colour than those of S. japonica.

(*To be continued.*)

SMOTHERED FLOWERS.

We all insensibly speed the parting and welcome the coming guests rather too precipitately for the well-being of our plants. Look at bulbs to wit, how beautiful they are, and many of them fragrant as beautiful; but hardly have the flowers faded than we begin to be impatient with their leaves, the flower makers for another year. Hence they are either torn up and transplanted in full growth, tied into bunches out of the way like horses' tails at plough, or a huge patch of Nemophila, Virginia Stock, or other early annual, is allowed to overrun and shut out every sunbeam with a thick, dense turf of beauty; and yet when the bulb resents this slight by coming forth weak or worthless the succeeding season, we affect to be greatly astonished, and talk or write about the Crocus, Tulip, Anemone, or Gladiolus disease. Disease indeed! We shut out the light, which is the life and vigour of the bulbs, that through the ministry of the leaves is manufactured into flowers, and then tell the poor blanched things to go on making their flowers all the same. It is in vain. The same is true of all spring flowers, with the difference of a single word—for bulbs read crown. What the strength, size, and plumpness of the former is to next year's harvest of beauty, the same characteristics of crown are to the flowering of herbaceous plants the succeeding season. Overshadow these during the summer and autumn, and little or no golden glory of summer suns will light up your borders or gardens from February to May of 1874. You cannot reap two crops from the same sunlight and heat. These spring beauties have ravenous solar appetites; many of them never tire of basking and drinking in the sunshine. They seem merely idling or sleeping away the warm summer and autumn tide, and give no sign. They are busy, however, all the while. The more light, and air, and sun and free space they have, the more beautiful will they be when beauty is most wanted. All these are mere truisms, and it is humiliating to have to repeat them in various forms so often. Would that the repetition would arrest the evil, but it seems hardly to touch it. It is doubtful if a single mixed garden will pass though the summer without many choice spring and other herbaceous plants being crippled or ruined by the encroachments of grosser plants, either above or below, or both. But the greatest evils arise from the indiscriminate use of annuals. Their rapid growth and gross feeding bring ruin on choice Alpine or other plants. Each overshadowing leaf is a thief and a robber, weakening the stability of each crown for the succeeding season. To develope and strengthen these to the uttermost is the secret of success in the culture of all such plants as early Violets, Primroses, Aubrietias, Daisies, Forget-me-nots, &c. Doubtless a reserve garden is the best situation for the preparation of all this future beauty; but it is not always available. The same spot must often be used to prepare and to display beauty; every plant is always doing one or the other; and space and a free out-look skyward are equally or more essential for the preparation than for the exhibition. This is easily written, but in practice it is mostly ignored. The temptation is great to press upon plants unduly as soon as their beauty fades, and to give that huge patch of Arabis or Alyssum as much room as that glowing mass of Clarkia or Godetia. But if a difference is to be made, it ought to be in favour of the herbaceous plants. Thus only will the mixed garden bring forth perfect flowers in season all the year round. Whatever may happen under the bedding system, one of the chief charms of a mixed garden is a seasonable and continuous supply—not a glut of flowers during summer and autumn, a fallow in winter, and a skeleton yield of bulbs and other spring flowers. This is to fashion the garden on the model of extravagant households—a feast on Sunday, plenty on Monday, a fair supply on Tuesday, and semi-starvation for the rest of the week. In well-ordered households each day is provided for; so should it be in our mixed gardens. And to this end we must have zealous care of the leaves of bulbs and the crowns of herbaceous plants during the free growth of summer and autumn beauties.

T. D.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

New Zealand Flax.—Can any of your readers inform me whether it would be (in a commercial point of view), worth while to cultivate Phormium tenax in those parts of the British Islands where it succeeds? I should also like to know whether the various sorts of Phormium offered by nurserymen are distinct natural species, or mere variations induced by cultivation.—W. F., *Isle of Man.*

Propagating Roses.—Two years ago I put in three rows of Rose cuttings of many varieties in October, and nine out of every ten made good plants the first year. I have this season three more rows, and on looking at them to-day (25th March) I find that they have all apparently taken well. During sharp weather I protected them by means of a little Fern.—G. R.

Crocuses.—I have plenty of yellow Crocuses; but shall be obliged by your giving me the names of half a dozen good kinds of other colours.—R. H. B. [The following will be found to answer your purpose viz., Dandy, blue, with white tips and purple base; King of the Blues, violet blue, very fine; Mont Blanc, pure white; La Majestueuse, petals broad, pale mauve, with a purple base, large and fine; Comtesse de Morny, large blush with a purple base and striped, and Louis Philippe, bluish purple, very large and fine.]

Spring-flowering Plants.—The following are now in bloom in the Wellington nurseries, viz.: Anemone blanda, Pulsatilla, and ranunculoides; Saxifraga coriophylla, oppositifolia and its varieties alba and pyrenaica; Primula denticulata and its variety floribunda, erosa, glauca, helvetica and its variety alba, villosa, and Candolleana; Scilla bifolia and sibirica; Soldanella montana; Dondia Epipactis; Bulbocodium vernum; Cheiranthus præcox; Narcissus pumilus; and various Hepaticas, of which I think the single red is one of the most useful.—W. J.

THE GARDEN IN THE HOUSE.

COTTAGE WINDOW GARDENING.

We find the following paragraph in the *Manchester Guardian* of Monday, March 24:—

> Cottagers' Flower Show in Salford.—On New-year's Day we *(Guardian)* gave some account of a movement set on foot by Mr. Leo Grindon, Mr. John Edwards, and some other benevolent gentlemen whose names have not come to the front, for the encouragement of the growth of simple flowers in the windows and dwellings of the poor, so that objects of beauty might help to brighten them, and ideas of neatness and cleanliness be awakened and fostered, especially in the minds of children, to whom the care of the plants was to be specially entrusted. Several hundred Hyacinth bulbs were purchased, properly potted, and distributed gratuitously, but carefully, and chiefly in the immediate neighbourhood of Broughton-road, Salford, with the understanding that, when in bloom, there was to be a general exhibition. The show was held on Saturday afternoon, in the Richmond Lecture Hall, and showed the effort to have been far from in vain, not less than 250 plants being brought in by the owners—one a piece, of course—and of these at least 100 were such as would have done credit to any parlour. There was no doubt as to the kind of atmosphere in which each particular plant had grown—a fact that the Sanitary Association might do well to note; nor could there be any uncertainty as to the stimulus that had been given to notions of tidiness and pretty "get up," some of the flowers being trimly tied with ribbon, others labelled with tasteful little cards, &c. A considerable number of visitors paid their 2d. for admission, and in due time the prizes were distributed. These consisted of about a score of nicely-established Hydrangeas, Vallotas, &c., kindly given in person by Mr. R. S. Yates; while every exhibitor received a little packet of some kind of flower-seed suitable for the pot when the Hyacinth should be withered, with instructions how to sow it, &c. Lest there should be any difficulty as to proper soil, a gentleman resident in Lower Broughton expressed his willingness to supply every applicant. We take this movement, simple as it is, to be one of the kindliest on behalf of the poor that the day has produced, and commend it heartily to the practical sympathy of all right-minded people. It is independent of sect or party, costs very little except personal labour, and lays the foundation for an immense amount of good results.

To the concluding sentences of this gratifying paragraph we say a most hearty "amen!" Just before Christmas last we ourselves reprinted, as our readers will remember, the card of "Instructions," a copy of which was given with every bulb, and invited attention at the same time to a movement which seems likely to progress so happily. While striving to ornament and improve our gardens and conservatories, time is well spent also in developing a taste for flowers among those who have never had the charms of nature presented to them in a way that could be understood, and especially who have never had a pot-flower to call their own. It is a duty, we take it, on the part of every man who is privileged to possess a garden, and who has felt the sweet influence of plants and flowers, to do the best that lies in his power to awaken the taste in others, and to gratify it. Nature knows no distinction of rich and poor; human hearts are constituted pretty much the same, whether the owners dwell in villas or in cottages, and if there be a ministry of good in the companionship of plants and flowers that affects the "upper class," it only wants proper and timely directing to affect the lower classes also, and to still greater advantage. The rich find stimulus in a score of beautiful things, such as the poor can never possibly possess, as costly books, pictures, statues, and other consummate works of art. In these the poor cannot even be made sharers, and so much the more reason accordingly is there why they should be encouraged to take interest in flowers, which, like the blue sky and the summer breezes, are, independent of social distinctions, given for every one freely to enjoy. Those, we say, who are embosomed in surroundings wrought by art, and who can command what they please, in the way of Orchids and Camellias, are the people of all others to whom such a movement as this excellent one in Manchester should be interesting, for it is a compliment to their own taste that it should be imitated in a manner so amiable and inoffensive. Some one said, long ago, that the songs loved by the people were a capital index to their morals. It is certain that to diffuse the love of flowers would help to mend manners in many quarters that at present sadly need a change for the better; and we cannot but feel persuaded that the day will yet arrive when, owing to the judicious promotion of cottage window gardening, it shall be said of the people, that what their songs were aforetime, their flowers have become in the riper and better age. Simple and kindly endeavours to improve the complexion of the homes of the poor, and the dispositions and pastimes, especially of the children, appeal in the directest manner to their better feelings. For though often deplorably ignorant, working-men and their wives are not so dull as to be insensible to the leverage of kindly and unaffected endeavours to give them pleasure, and to brighten their existence, and that of their boys and girls, with something that needs no great intellectual effort; and it is precisely because so straightforward a matter as Hyacinth growing and attention to a Geranium or an Hydrangea can be accomplished by the weakest, that this particular department of window-gardening seems to us likely to prove so useful. From the paragraph above quoted, it appears that when the Hyacinths are over, there is to be an attempt in the way of flower-seed growing. This will require more care and attention, and for that very reason is again sure to be substantially useful, especially where there is pleasant and opening intelligence on the part of a lad or a girl, which wants only some engaging object to fasten upon. A flower some may consider a very poor thing to put in the place of a school-room lesson. So far from being an inefficient substitute, it is really and truly the best stepping-stone that can be provided when there is a genuine desire that the faculties shall be called forth. A book-lesson is often slurred because of its unattractiveness, whereas a flower holds the attention just because of its intrinsic and charming beauty; and directly that a youngster is got to take interest in the germination of his seeds, and in the evolution of stem and leaf and blossom, if he is ever going to think at all, then will be the time of his commencing. Think, too, of the habits of order, cleanliness, and tidiness which are induced by the endeavour to have good flowers! In its progress, the lad learns the blessedness of fresh air; the evils of dirt, and of invisible, but none the less noxious, vapours; the salubrity of sunshine, as a something not merely to play marbles in, but to utilize to glorious profit. A healthy and well-sustained interest in window and workshop flowers constitutes, in a word, one of the best assurances of eventual manliness and womanliness, and all who are wise and Christian will strive to promote it, especially in our large towns.

Deciduous Azaleas as Indoor Plants.—A. calendulacea, glauca, viscosa, nudiflora, pontica, and mollis, are all dwarf shrubs with deciduous leaves, suitable for indoor decoration. The first four are found in swamps in North America, and are the original stocks from which, by artificial fertilisation, the various garden varieties with deciduous leaves, small stems and branches, and white, rosy, and orange-red or sometimes even deep red flowers, have been raised. A. pontica is a native of the Caucasus and other Eastern ranges. It makes a more robust growth than the other kinds, and has pure yellow and very fragrant flowers. A. mollis is a Japanese kind, resembling A. pontica, and, like it, has yellow or reddish-yellow flowers. All these are equally well suited for forcing, and being low and much branched, with large handsome and fragrant flowers growing in umbels, they are amongst the best subjects that can be recommended for indoor decoration. For early forcing, only such specimens should be employed as have been grown in pots through the preceding summer, when they should have been treated like other shrubs, but should not be watered with liquid manure. They should not be pruned, and in autumn should be kept dry, to ripen the wood well, but not so dry as to cause any injury to their roots. After they have received a little frost, they should be placed in a cool room where the temperature is kept above freezing point. Specimens which it is desired should bloom at Christmas, should be removed into a warm room about five weeks before that time. If, before their removal to the warm room, they have stood for some time in a temperature of from 38° to 45° Fahr., the result will be much more satisfactory.

Beaucarnea recurvata as a House Plant.—I have tried many plants for the decoration of halls, porticos, and similar places, but this Beaucarnea has suited my purpose better than any of them, and in such positions has been universally admired. Well grown plants of it, about 18 inches or 2 feet in height, in eight-inch pots, make fine ornaments for this purpose, especially when placed in a vase and when the surface soil is covered with Selaginella. They are very retentive of life and will exist under house treatment uninjured for many weeks together.—John Fraser, *York*.

THE INDOOR GARDEN.

DRACÆNAS.

Dracæna Mooreana.

Twelve months ago I brought into the room where I am now writing a plant of Dracæna ferrea terminalis, which, despite the gas-heated atmosphere, remained, with a weekly washing, in fine condition until the following April, and that in an atmosphere where dozens of flowering plants failed completely. But the best of the Dracænas is that they are not difficult of cultivation; with space and heat and moisture you may grow them to any size, and, with sufficient heat and cleanliness, you may maintain the plants in health after they are grown for many months. The plants are most easy of increase. Take an old stem—no matter how thick—cut it into pieces an inch long, lay these in congenial soil, give a bottom heat of 80° to 90°, and in three or four weeks each piece will be a sturdy young plant, which only requires time and care to grow it into a splendid specimen. No plants are more useful for table decoration than Dracænas, when suitable plants are selected. If they are too tall for that purpose, pass your knife round them at the desired height to the depth of the bark; with the thumb-nail press the severed part away; take a little nice sandy soil, and with a handful of Moss fasten it around the wound; and in a few weeks the head will be rooted, and may be removed with perfect safety to be placed in a vase or any other convenient place. This, to say the least of it, is a convenient way of extemporising a plant. Then every joint, from the place where the severance is made to the base, will produce a shoot that will make a plant; and, what is more, the stronger roots may be cut into lengths an inch or two long, and, under the same conditions as the stem cuttings, each piece will make a plant. There is therefore no reason why the Dracænas should not be cheap and common plants, for they may be propagated with the utmost facility, and, give them heat sufficient, they may be grown without much trouble. The plants procured, the next thing will be to grow them on; and for that purpose a temperature of 60° to 80° will be required—that is, 60° as a minimum temperature, and 80° as a maximum. The plants are not particular about soil, but a compost of one-half turfy loam, one-quarter peat, and the remaining portion leaf-mould liberally intermixed with gritty sand and charcoal, will grow them to perfection. With a material of this kind, drain thoroughly and pot firmly, and if you can give the plants the assistance of bottom heat, so much the better. The plants do not grow in the young state very rapidly, but when the pots are full of roots a little warm liquid manure will assist them materially. As a rule the plants do not make more than a single stem the first season; but if cut down to near the surface of the pot they may push two or three shoots, and these when cut again—we mean in the next year—six or nine. We have now a plant of D. ferrea terminalis with twelve leaders, each starting from within a few inches of the surface of the pot, and it is easy to perceive that such a plant will form, when fully developed, a mass of colour not readily to be surpassed. For house decoration nothing can exceed the Dracænas, so long as you keep them clean—that is, regularly washed; they seem to have a grasp of life under difficulties which few plants possess. So far we have spoken of the Dracænas as stove plants; but, as many of them come from New Zealand and Australia, they will of course succeed perfectly in the greenhouse, or even in the open air in the summer season. Of those remarkable for colour and good for winter decoration we should select D. ferrea and D. ferrea terminalis and grandis, both remarkable for the rich colouring of the terminal leaves. Then there is D. Cooperi, with highly-coloured and gracefully recurved leaves, one of the most beautiful of the family. Of more recent introductions may be named D. Mooreana (for an illustration of which we are indebted to Messrs. Veitch) and Guilfoylei, both remarkable for their rich tints of colour; while in D. regia and Chelsoni the crimson markings are replaced by white or cream-colour and white, and hence a group of Dracænas will be rich in variety as well as in colour. One secret in the successful management of the genus is that of regular washing both the upper and under sides of the leaves. They are liable to be infested by thrips and red spider, and washing with soap and water is the best preventive, and perhaps the best remedy. We may add that many of the Dracænas are admirable subjects for the sub-tropical garden, especially the more hardy kinds.

P.

CHYSIS BRACTESCENS.

It is not a common occurrence to meet with a well-grown, healthy plant of this fine Orchid, or, indeed, with any species of the genus, so a few words on their culture may be interesting. This species is a native of Mexico, from whence it was introduced to this country in 1839. Its flowers are of a stout, wax-like consistence, white in colour, with a blotch of lemon yellow on the five-lobed crest. When well grown it produces spindle-shaped bulbs, from 1 to 2 feet in length, bearing five or six lanceolate leaves with undulating margins. Each young growth produces one or occasionally two spikes of flowers, which are closely arranged on the spike. This plant, together with its congeners C. aurea, C. Limminghii and C. lævis, grows well in baskets suspended near the light. All the species grow well in living sphagnum and crocks, and require a humid atmosphere, together with an abundant supply of water at the root when growing. The syringe must be used freely, and care must be taken to keep the foliage free from the ravages of thrips, otherwise the plants will speedily become unsightly, producing weak spindling growths, that are extremely liable to damp off. C. Limminghii has smaller flowers than those of C. bractescens, and they are of a purplish lilac colour, the lips being streaked with crimson. Of this species there is a most remarkable specimen in the collection of Dr. Poppleton, Newley, near Leeds, with pseudo-bulbs 18 inches long, and as thick as one's wrist. This plant has borne from sixteen to eighteen fine spikes for several years in succession, and is worth travelling miles to see, since no description can do it justice. C. undulata is a rare and handsome species, the pseudo-bulbs of which are some 18 inches in length, and the flower-spike produces eight to ten blossoms, the sepals and petals of which are of a lovely orange yellow, the lip, which is cream-coloured, being striped with pink. Of this a fine plant exists in the Meadowbank collection. All the species are easily propagated by cutting off the back bulbs and laying them on their sides on living sphagnum, in a close propagating case. They will luxuriate in an intermediate house, but it must be very humid and moderately shaded from bright sunshine. F. W. B.

Marechal Niel Rose under Glass.—What a glorious Rose this is when planted out in a rather cool house and allowed to develop itself! Two years ago I planted on a back wall, in a new house just erected, a plant I had budded on a briar the previous summer. The situation was not particularly favourable for it, as it does better trained nearer the glass; but last year it made shoots, some 10 feet long, which were laid in along the wall their full length, and now every eye has broken, and the plant is studded with bloom buds over the whole surface. A stronger plant of climbing Devoniensis, planted at the same time, has not done near so well. One of the very best plants of Maréchal Niel I ever saw was planted in an open-roofed orchard house (where the fruit trees were grown in pots), and it had rambled unpruned, or nearly so, all over the roof; but the foliage was not sufficiently dense in any part to injure the trees beneath, and in fact, I was told a much larger return in profit was derived from the Maréchal than from the potted trees for which the house was originally built. There is an old tea-scented Rose called Moiret, a strong, vigorous grower, and one of the best to plant under glass I have ever seen. Some years ago I had it in a lofty conservatory, trained up one of the pillars, and allowed it to ramble about near the glass. We could at almost any time, either winter or summer, cut a beautiful bouquet of Roses from this old plant. In winter the flowers were almost a pure white, but as the days lengthened the edges of the petals were tipped with pink. I have a plant of it on a south wall here, but in the open air the colour is a beautiful lilac-tinted pink. I cannot imagine a greater luxury amongst flowers than a house devoted to Tea Roses. Planted in a good border, allowed to develope themselves, they then assume their true character, which is much unlike the long miserable plants of them which we sometimes meet with in pots; and when well treated and in vigorous health, that bane of their existence, mildew, is not nearly so troublesome as it is when the plants are grown under less favourable circumstances. —E. H., *in Field.*

BIGNONIAS.

These profuse blooming and extremely ornamental plants are popularly named Trumpet Flowers; they are climbers, furnished with numerous tendrils, by which they attach themselves to surrounding objects. Although the majority of Bignonias are natives of tropical countries, several kinds will live with us out-of-doors all the year round; others succeed in the greenhouse or conservatory, whilst some, and perhaps the largest number, require stove heat, where, if trained upon pillars or rafters, they form noble ornaments; in short, they may be reckoned amongst the most beautiful and gorgeous of climbing plants, when grown in the border and so trained; but they cannot be recommended as pot plants. The soil best suited for their growth is good loam two parts, peat one part, and a sufficient quantity of sand to make the mixture feel gritty. In planting in the conservatory border, spaces should be boxed off, in order to restrict the too great extension of the roots. Although Bignonias are not well suited for permanent pot culture, it will be necessary to grow them in pots for a year or two, before planting them out, in order to get them up a considerable height, or they may be some time before they recover from the change, and thus disappoint the expectations of the cultivator. They require ample drainage, an abundant supply of water during the summer season, and a limited amount in winter; but the drying off system must never be carried out severe enough to shrivel even the young wood. In early spring the plants may be pruned and the shoots thinned out, so that the sun may not be excluded too much from other plants which may be growing below them. During the growing season the syringe must be used frequently until the flowers begin to swell, when its use must be discontinued.

B. venusta.—This is a plant of robust growth, and one which must be allowed ample space; the leaflets are oblong-ovate and acuminate, the flowers large and trumpet-shaped, of a glowing orange-crimson colour, freely produced, and keep in full beauty for at least two months at a time. To grow this plant well it should be planted in the bed of a stove in bottom heat; but this treatment is by no means compulsory, as it thrives well in a warm greenhouse. It is a native of Brazil.

B. speciosa.—This species is less robust in growth than venusta and may be grown in the warm end of a conservatory. The foliage is oblong-ovate, and shining light green in colour, and the trumpet-shaped blooms are produced in abundance from the axils of the leaves. They are about 2 inches in diameter, of a soft lavender colour, shaded with violet and purple, and have a white throat. It is a very handsome plant, which may be found in some collections under the name of B. picta. It is a native of South America.

B. Chamberlaynii.—This superb species should find a place in every plant-stove, for although not quite equal to B. venusta in beauty of inflorescence, it is nevertheless a magnificent climber, and not being so robust as B. venusta, may be accommodated in a smaller stove. The leaflets are ovate-acuminate, usually produced in pairs—smooth, shining, and dark-green, and furnished with a strong tendril, by which the plant fastens itself securely to anything with which it comes in contact. The flowers, which are produced in drooping racemes from the axils of the leaves, are trumpet-shaped, the tube being upwards of 3 inches in length, whilst the five-lobed spreading limbs frequently measure 4 inches in diameter; they are of a soft bright yellow, and are produced in succession from May until October. It is a native of Brazil.

B. jasminoides.—This kind, which is called sometimes Tecoma jasminoides, is a native of Australia. Its leaves are pinnate, there being about two pairs of pinnæ, besides the terminal one. These are oblong-lanceolate, with a somewhat obtuse point, smooth, shining, and dark green on the upper side, paler below; the flowers are large, funnel or trumpet-shaped, and bluish-white, with a purple stained throat. It blooms during July and August, and is a magnificent plant for the conservatory. There are several varieties of it to be met with, all of which are very beautiful.

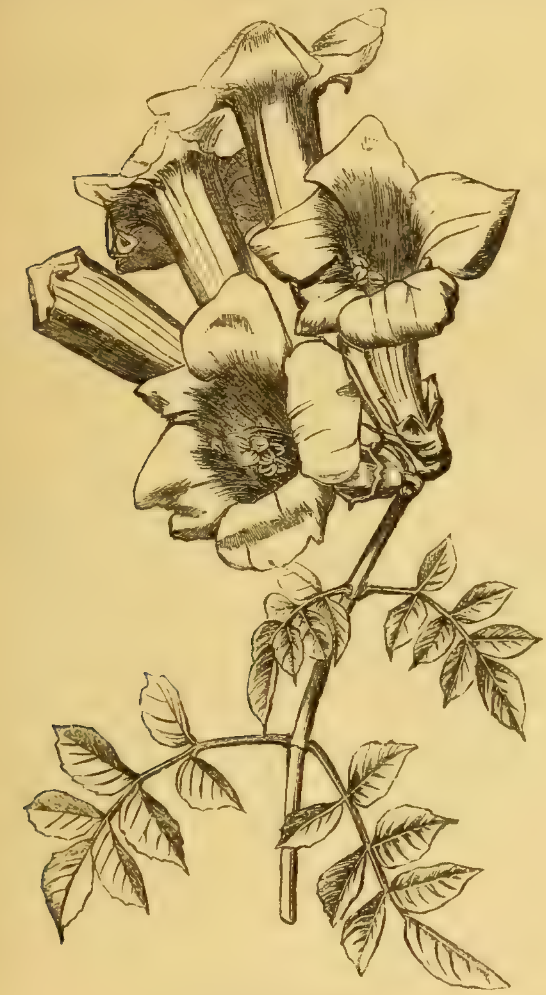
B. grandiflora.—This is a splendid plant for the greenhouse, and in the warmer parts of England it succeeds admirably against a wall in the open air. Its leaves are pinnate, from 6 to 12 inches long; leaflets ovate-acuminate, and slightly toothed at the edges. The panicles of bloom are terminal and pendulous, much branched, often measuring 2 feet in diameter, whilst the individual flowers are trumpet shaped, some 4 inches in diameter, and rich tawny orange outside, the throat being bright orange. It flowers through the months of July and August, and is a native of China and Japan.

B. radicans atro-purpurea.—This differs from the normal form in having its blooms beautifully suffused with deep purple. A very desirable hardy plant.

B. Cherere.—This is a fine stove species, having angular stems, and leaflets ovate-acuminate, smooth, and dark green. The racemes are terminal, and are ornamented with a profusion of large rich yellow trumpet-shaped flowers. It blooms during June and July, and is a native of Guiana.

B. capreolata.—This plant is well adapted for a greenhouse, where it will display its beauties from June to August; the leaves are pinnate, leaflets somewhat cordate, oblong, and furnished with three cleft tendrils; the racemes are axillary, bearing trumpet-shaped reddish-yellow flowers. It is a native of the southern portion of the United States.

B. unguis.—This species cannot be reckoned amongst the most showy kinds, yet it is sufficiently handsome to merit a place in any collection, whilst, being of less robust habit of growth than most kinds, it may be grown into a handsome specimen upon a balloon-shaped trellis. Its leaves are pinnate, leaflets ovate-acuminate, tendrils strong and three-cleft; the flowers are produced from the axils of the leaves, and are of a bright rich yellow colour. It blooms freely during the months of June and July, and is a native of Caraccas.



Bignonia radicans.

B. radicans.—A beautiful hardy species, well adapted for covering walls or old trunks of trees. Its leaves, as will be seen by the annexed illustration, are large and pinnate, and the flowers, which are funnel-shaped and of a rich orange-scarlet, are produced in July and August. It is a native of North America.—*Farmer.*

Gesnera elongata.—Last December there were in the warm houses of the Museum at Paris some fine specimens of this Gesnera completely covered with brilliant scarlet flowers. This fine old plant seems to have become rather rare in France. It is one of the finest winter-blooming kinds, the flowers, although small, being very numerous and of the most exquisite deep scarlet colour, while the habit of the plant itself is very pleasing and elegant. It was originally discovered by Humboldt and Bonpland in Peru, not far from the city of Quito.

VENTILATION.

The objects of ventilation are twofold—first, the lowering of the temperature of plant structures during the heat of the day; and, secondly, the constant renewal of the atmosphere of our plant-houses. In lowering the temperature we should be guided by the nature of the plants with which the house is stocked; thus a house containing Heaths, Epacrises, and similar hard-wooded plants from temperate climates will require free ventilation throughout the whole winter when the atmosphere is not frosty, while another house stocked with what are called stove-plants, or forcing Vines, will require to have the air admitted at the same season with the most extreme caution, and the danger to plants, as to the human subject, is a cold draught, especially when the atmosphere is frosty. We have frequently had plants severely cut opposite a broken square of glass, while others standing opposite an open sash have been quite uninjured. The great point, however, with what are called greenhouse plants, whether hard or soft-wooded, is to bring them up hardily, that is, as the days shorten and the natural heat decreases in the autumn, to get the plants firm-wooded and hardy, and with sufficient substance in them to resist the parching effects of cold winds, should they blow upon them. If you take a plant from a high temperature to a low one, that is from a temperature of sixty degrees to one of forty, and expose it to a free circulation of air, the leaves will in a short time become flaccid, and the younger ones quite dried up. But if you gradually inure the plant from the high to the low temperature, the tissue hardens, and the plant is able to resist the low temperature. Through a Heath-house the cold wind may whistle without injury to the plants, but the same air in passing through a collection of Pelargoniums, or Cinerarias, if it did not parch them up, the leaves would become comparatively withered, or what is termed foxy or red, around the edges. Hence the importance of suiting the winter arrangements of plants to the respective situations which they must occupy. Thus Heaths and Epacrises may stand opposite the ventilators, but the more tender New Holland plants, such as Pimeleas, Leschenaultias, Gompholobiums, Chorozemas, &c., require a comparatively sheltered situation where the wind will blow softly, and where, if possible, the temperature will be some degrees warmer than in other parts of the house. The advantages of the constant circulation and renewal of the atmosphere of plant structures are so great, that in erecting them arrangements should always be made to admit in cold weather a good volume of air near the heating apparatus, so that it may be warmed before it comes in contact with the plants; and were it not for the expense it would be well if a little extra fire heat could be used, so that there could be a constant circulation of fresh air by night and by day. Practically speaking, ventilation should commence at the top of the house first, the object being to let off any contaminated air that may have been engendered during the night. For this purpose a mere chink to two or three of the top ventilators or sashes early in the morning will be sufficient, and these openings must be increased as the temperature rises, until, if the external atmosphere is sufficiently mild, the front ventilators may be opened and a free circulation allowed throughout the house. This remark applies more especially to cool plant houses, but where forcing is going on a little more caution will be necessary. Air must still be admitted at the highest point early in the morning, and be increased as the temperature may require, but great caution must be exercised in opening the front ventilators, unless you have the power of warming the air before it comes in contact with the plants. If you have not this power, and the exigencies of cultivation demand front air, then the openings of the ventilators should be covered with woollen netting of a quarter-inch mesh, so that the cold air may not rush in in volume, but may be gently sifted and warmed as it passes into the house. Nor is this all: cold air being dry, requires to be moistened, and if this moisture is not provided by artificial means (such as evaporating troughs upon the heating apparatus, a fermenting bed of dung, leaves, or tan, or by sprinkling the floors, walls, and paths almost constantly with water, or better still, by fitting the house with the patent panelled and perforated water slabs), the air will draw its moisture from the foliage of the plants, and hence vigorous growth will be impossible. In a large forcing establishment it is generally the work of one or two men to sprinkle the houses—that is, from the opening of the ventilators in the morning until the closing of them in the afternoon, they go, watering-pot in hand, and sprinkle every bit of available space, so as to keep it moist, and the atmosphere of the house loaded with vapour. Indeed, what we want in our forcing-houses is just what nature supplies in tropical climates, or what we occasionally, but rarely experience in this country—that is, an atmosphere loaded with moisture, and yet warm—not hot—and genial. Then it is that plants grow with renewed vigour, and their growth goes on without the slightest hindrance—then it is that you get broad vigorous foliage and sturdy growth, and then it is that the plant lays up that store of nourishment which builds up its fabric, and forms the flowers and fruit. But there is yet another phase in which ventilation must be considered. So far we have been thinking of growth, but maturation is necessary, and whether that consists in the formation of flowers, or the perfect ripening of fruit, the conditions necessary must be supplied. For growth, moisture is indispensable, but for maturation a drier atmosphere is necessary. Hence, when the growth is drawing to completion, or the fruit begins to change colour, then it is that atmospheric moisture must be gradually decreased, so that by the time the fruit is matured, the atmosphere may be much drier. To sum up—ventilate early in the morning and gradually increase the volume while the sun is full upon the house, but when it has passed the meridian and the rays fall obliquely, gradually decrease it, and finally close the house some time before the rays leave it. Avoid cold draughts. Keep up plenty of atmospheric moisture during the growing season, and you will not go far wrong. As we advocate a constant circulation of fresh air when it can be safely had, it is scarcely necessary to say we approve of night air, and to that end, and particularly during the ripening season, we admit a little air the last thing at night, and allow it to remain on all night. W. P. Ayres.

GARDEN DESTROYERS.

VINE PESTS.

These, as a rule, come from neglect. Keep the atmosphere of your vineries in a clean and healthy state, attend to the ventilation in a timely and proper manner, and you will not be troubled with either insects or mildew; but, neglect these precautions, and one, if not both, will quickly be seen upon your Vines. Red spider and thrips luxuriate in a dry close atmosphere, mildew in a close damp one; but it is a rare thing for either to appear if the atmosphere of the house be kept pure and healthy. A healthy atmosphere can only be secured by the timely admission of air in the morning; indeed, the atmosphere of a forcing or plant house, to be really healthy, should have a constant ingress and egress of fresh air night and day, not necessarily a strong draught, but just sufficient to admit of a gentle circulation of fresh air. All good cultivators are cognisant of the importance of an arrangement of this kind, and for very early forcing special arrangements are made to that end. The best and most durable arrangement for this purpose is to place opposite two or three of the ventilators (the number being governed by the size of the house) frames of the necessary width, and about 1 foot deep, filled in with fine perforated zinc. Through this the heated air escapes very gently, but still sufficiently to allow of the necessary change of air. An atmosphere so regulated, with a sufficient degree of moisture, is the very opposite of what is required for the propagation of mildew or insect life.

There are, however, some insects which, if they get upon the Vine, are special nuisances, and of these notably the mealy bug, and the mussel and brown scale. For the extermination of these pests, nothing short of a complete removal of the loose bark, thoroughly scrubbing the Vines afterwards with soft soap and hot water, and then painting them with a wash consisting of strong soapsuds, lime, soot, and sulphur, mixed to the consistence of thick paint, will suffice. For the first painting it is better to omit the soot, as, with the second coat, containing the soot upon the white foundation, you will be better able to see that the whole plant is thoroughly coated with the wash, more especially the cracks and crevices around the spurs. Upon this the success of the application mainly depends, and therefore too much care cannot be taken in applying the mixture. If, however, mealy bug has been allowed to establish itself in the house, nothing short of painting the house, carefully stopping every crevice, and lime-whiting the brickwork with hot lime will be sufficient to ensure a complete cure. Mealy bug is not generally a Vine-pest, but when it gets upon them, and more especially among the bunches of ripening fruit, it spreads with uncommon rapidity, and soon renders the Grapes unfit for use. The brown and the mussel scale yield to the same treatment, though the latter is more troublesome than the former, and to ensure the destruction of its eggs, the horny coating which covers it must be removed before applying the wash.

As to red spider, its ravages depend in some measure upon locality. Some places and houses can scarcely be kept free from it, except by the most painstaking attention; while others are rarely infested with it at all. Indeed, as has just been remarked, cleanliness is the great preventive of insect ravages, and therefore at the time of the winter pruning it is wise that the woodwork of the house should be thoroughly cleansed with soap and water (if not painted), and that the walls should be lime-whited, mixing with the lime-wash a fair proportion of sulphur. The best way to do this is to put several lumps of quick-lime into a bucket, and then, putting warm water to it, let it stand until it begins to boil; then add half a pound or more of flowers of sulphur, stirring the two intimately together, and by the time the water ceases to boil, the lime and sulphur will have become united; when, if you pour off the clear liquor, you will have a solution of sulphur; and this, mixed in the proportion of one part to three of clean water, will destroy red spider instantly. This is a preferable application to that of dusting sulphur over the plants and houses, as is the usual custom; but it must be remarked this solution should not come in contact with the paint of the house, or it will combine with the white-lead, and form a black sulphide, imparting a very ugly appearance. One more precaution let me note, and to that particular attention must be paid. In making liquid sulphur, decant and stopper the bottles quite closely directly the liquid has settled. If corks are used, they should be sealed or resined down; when a bottle is opened, it should be used immediately. By the use of liquid sulphur the spider may be kept in check; but as it cannot be applied after the fruit is set, then the vapour of sulphur must be resorted to. This may be applied either by coating the hot-water pipes with sulphur mixed, to the consistence of paint, with skimmed milk, and then when the pipes are warm (but not hot) damping them for an hour or two on three successive evenings, so as to keep the house full of sulphur-impregnated vapour; or it may be used as follows:—Procure a bushel or so of lime quite fresh, and placing it in tubs in different parts of the house, pour hot water upon it. As soon as the lime begins to slake, throw into each tub half a pound of sulphur, and stir it well into the lime. Add more hot water if necessary, and the house will soon be densely filled with sulphur vapour. Two or three applications of this kind will be found a complete cure for both red spider and mildew.

Thrips must be dealt with either by fumigating with tobacco, or washing the plants with a weak decoction of tobacco water. The former is the only cleanly and efficient remedy; but the application must be repeated three times, say twice in the first week, with an interval of a day or two, and then again in about ten days. By this time the eggs from the first brood of insects will have hatched, and thus may be readily destroyed. Three fumigations within ten days or a fortnight I have invariably found to be a complete cure. Thrips, however, have a strong feeling for self-preservation, and no sooner do they scent anything wrong in the house than they drop from the plants and bury themselves in the soil; hence the advantage of a second smoking in the same week, to catch them when they have returned to the plants.

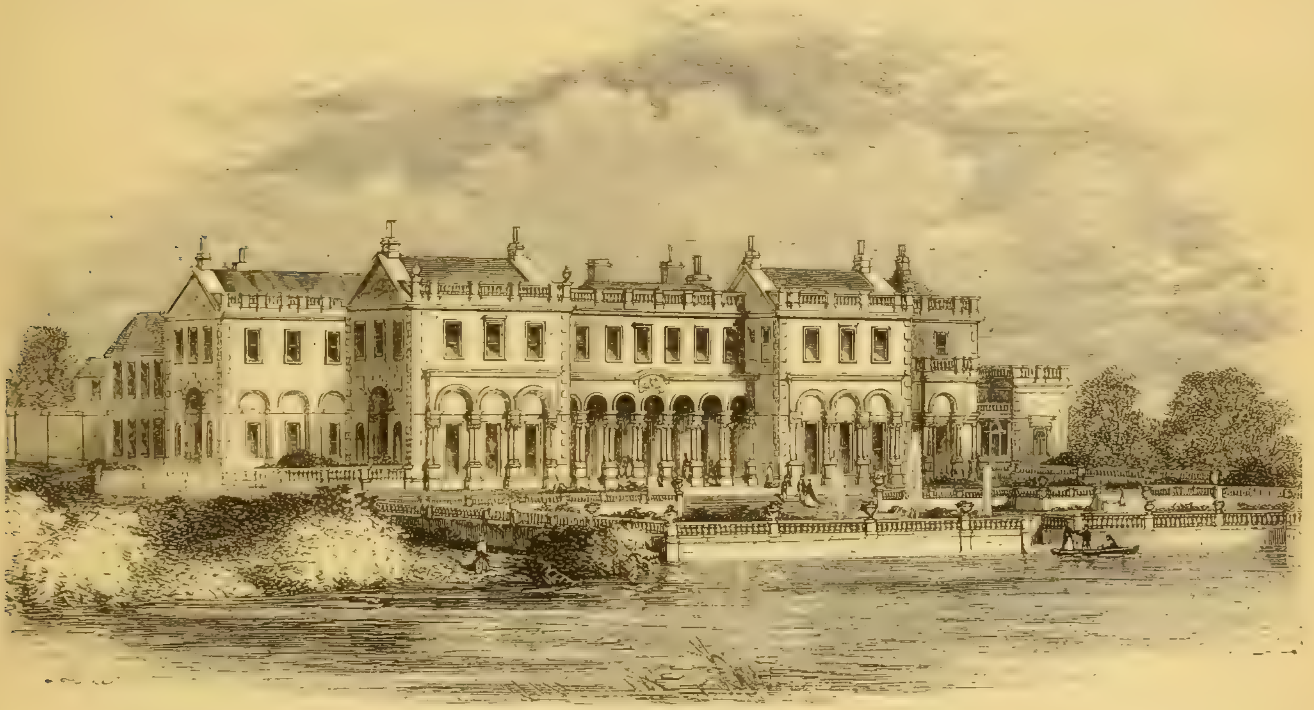
Of appliances for fumigating we have plenty; but the best, the cheapest, and the most effective is a wire basket, 1 foot or 18 inches square and 6 inches deep, with a strong wire from each corner to suspend it by. Into the bottom of this throw a handful of hot cinders, and over that another handful or two of charcoal. Then swing the basket about for a few minutes, and you will have a nice red fire. The best tobacco for fumigating is undoubtedly common shag, and, properly used, I believe it to be cheaper than most of the tobacco papers now offered to the public. In using this tobacco, I procure a handful or two of wet litter from the stable, and, chopping it into pieces about an inch long, mix it with the tobacco as intimately as possible. Then place it upon the fire, give the basket a swing or two in the air, and a volume of smoke will be evolved that will fill the house in a few seconds, and not only that, but, if the mixture is in a proper state of humidity, it will continue to burn for some time, and thus keep the house filled—a very important point in destroying thrips. Suspend the basket in the house, and the only further precaution necessary will be to watch and damp it should the tobacco burst into flame. By these simple means fumigating is reduced to a minimum of trouble; and to fill half a dozen houses with tobacco fumes in thirty to forty minutes is an easy task. A.

Ash Plants Barked by Mice.—I forward for your inspection two young Ash plants, about 8 feet high, cut this morning from one of our plantations. You will perceive that the bark has been gnawed away from the root to the upper twigs by some small rodent. I suspect the delinquent in this case to be the common field mouse. Nearly half the Ashes in a plantation eight acres in extent have been either quite destroyed or more or less injured by the little enemy in question; and, judging from the extent of the fresh injuries which we daily perceive, the evil is one which is not likely to cease. Can any of your readers suggest a remedy for this damage? I find that other plantations in this neighbourhood are similarly affected. In every case it is the Maiden Ash that is attacked, the shoots or suckers from the old stools being untouched. The field mouse, like the house mouse, has increased immensely during the late wet and unseasonable summer and autumn. The Grass in the pastures and on every dry bank is tunnelled in every direction with their runs, and they swarm alike in houses, buildings, and stacks along with the common mouse. Unfortunately, now that the hawks and owls have been exterminated, there is nothing left to keep these pests within reasonable bounds.—J. C. [The mischief is certainly the work of a small rodent, and there is little doubt that our correspondent has decided correctly on the species, the long-tailed field mouse. As to the remedy, it is difficult to suggest one. Owls prey unceasingly on these mice by night, and kestrels by day; these invaluable birds, to both gardener and farmer, should therefore be encouraged for this purpose, for, without them crops in some places would be devoured by mice.—Ed. *Field.*]

THE GARDENS OF ENGLAND.

CLUMBER, THE SEAT OF HIS GRACE THE DUKE OF NEWCASTLE.

Clumber! The very name strikes one with commiseration, not for the cause, but for the consequence of so noble a place being dismantled, and, from a gardening point of view, converted into a comparative ruin. Situated in one of the finest parts of the "Dukeries," as they are called, in the brave old forest of Sherwood, Clumber has long been regarded as one of the finest baronial residences in England; for, embosomed amid magnificent timber, with a park such as is rarely met with, a lake which, for picturesque beauty, is almost too much like nature to pass for an artistic creation, there is a charm about Clumber which carries one quite away from the little prettinesses which please for a time in more pretentious places. Here the landscape is of the most delightful description. Whether planted for the purpose or not, the noble trees beside the lake dip their branches into its bosom, and form masses of sweet verdure; while the sighing of the "west wind" through the Cedars and Pine trees, and the wild shriek of the water fowl, almost make one fancy oneself far away by some tributary lake in some primæval forest. Cedars of Lebanon, the Deodar, and Coniferæ of the earlier introductions, may be found here in the form of handsome specimens, while of our native trees the name of Clumber is sufficient guarantee that they are worthy of the site which they occupy. The mansion is not happily situated, or, to speak more plainly, it is too low, the ground-floor reception-rooms being but a few feet above the level of the lake just adverted to; and though we have never heard the place spoken of as being unhealthy, it has in the winter season, when fogs are heavy, a "catch cold" look about it. The house is supported by a spacious terrace on the south and east fronts, and there is also a small conservatory. Our illustration, from the "Life and Works of Sir Charles Barry," shows the garden front. All the best mansions in the "Dukeries" are singularly unfortunate in their positions, all being low, or, compared with situations they might have occupied, comparatively so. Two minutes' walk north-west, and Clumber might have stood on a piece of table-land, and the same may be said of almost every other mansion in the locality. Unexceptionable sites abound, but, from some inexplicable cause, they have not been selected. Thoresby, with its new mansion, has escaped from the morass, but it might have gone further up the hill and fared no worse. Clumber possesses a fine kitchen garden and a considerable quantity of glass, but most of it is in a very dilapidated state, though some of the houses continue to produce fine Peaches and Figs. Here, too, may be seen some fine old Vines, with stems almost fit for timber, and among them a plant of that finest of all black Grapes, the rarely seen and scarcely known Black Damascus. This Grape, we believe, was brought from Damascus at the time Speechley was a gardener at Welbeck, by the then Duke of Portland, grandfather of the present Duke. It is, therefore, not improbable that the Clumber Vine is one of the original stock. We assisted to transplant the original plant—then not less than forty years old—at Welbeck, in 1832. The removal was a success, and it produced Grapes as large as Orleans Plums, but when the old garden was destroyed, it also had to succumb. Sherwood.



Clumber—Garden Front.

M. Linden, of Brussels, has lately imported a large stock of young plants of the celebrated Cow tree of South America—the *Palo de vaca* of the Spanish and the *Sandi* of the Indians. This extraordinary tree, the botanical name of which is Brosimum Galactodendron, yields milk of as good quality as that of the cow. It flows freely from incisions made in the trunk, and is commonly used as an article of food by the inhabitants of districts where the tree is abundant. The tree grows upwards of 100 feet high, with a smooth trunk 6 to 8 feet in diameter, and without branches for the first 60 or 70 feet of its height. It forms large forests on the mountains and along the sea coast of Venezuela. Humboldt and his companions frequently subsisted upon this milk when lost amid the vast solitudes of the dense forests of the valley of the Amazon.

THE FRUIT GARDEN.

PEARS ON THE QUINCE.

At page 229 you give in "Notes and Questions on the Fruit Garden" a quotation, in which it is stated, that it is supposed that there are more than forty varieties that refuse this union. I will append a list below of many first-class sorts in my collection that have been found here, not to refuse the union, but that will not grow freely after they have united, and I may add that there are many more sorts that take freely and grow for a certain number of years, *i.e.*, from three to ten, but at last succumb to straitened circumstances, that is, the stock is not equal to afford a sufficient supply of nutriment to support them for any lengthened time. Now all these sorts either require to be double grafted, or to be worked on Pear stocks. The list given below comprises the most refractory of the kinds generally classed as of first quality. But it is farther stated that "Professor Decaisne succeeded at his first trial with twenty of these antipathetic varieties without difficulty," it is not clear, from the above sentence, whether the learned Professor succeeded on the Quince only, or on the Quince doubled worked; if on the latter, I do not think any one need fail of success, because the grafts take just as freely double worked as they would do upon a Pear stock not worked on the Quince. It is further said, that both Beurré Bosc and B. Clairgeau obstinately refuse to unite with the Quince; now no Pear that I know absolutely refuses to do so—especially B. Clairgeau. I have one-year-old plants of it, 4 to 5 feet high, and several of them with flower buds—although there are many that will not live long after they have taken; I may mention particularly Marie Louise and Seckel. These two are certainly the most refractory in my collection of 1,800 sorts. But Marie, nevertheless, takes very well double worked on the Nain vert, as also on the Cockspur Thorn. It will take upon the common Thorn, but does not do much good thereon. Before giving my list of refractory sorts, I must call attention to a paragraph at page 230, headed "New Plan for Double-working Pear Grafts." It is given as an American plan, but I must also claim the system, as this week I have been double-grafting to a considerable extent, and the idea struck me, can I not first graft a refractory sort upon one that grows freely upon the Quince, and then put the two grafts so united upon a Quince stock? No sooner thought of than done, whether successfully or not I must wait a few months to see, and will report my success or the reverse. From the extract you have given, I anticipate success. The following Pears are refractory as regards the Quince:—

Adèle de St. Denis
Adolphe Cachet
Ambrosia
Amiral d'
Archiduc d'Eté
Auguste de Boulogne
Augustine Lélieur
Aurate
Belle et Bonne de la Pierre
,, de Noël
,, Moulinoise
Bergamotte de Hildesheim
,, de Jodoigne
,, Dussart
,, de Strycker
,, Lucrative
Beurré Bailly
,, Bennert
,, Benoit
,, Berckmans
,, Bosc
,, Bronzé
,, Brown
,, Caty
,, Dalbret
,, de Bollwiller
,, de Ghelin
,, de Stuttgardt
,, Delbecq
,, Flon
,, Gendron
,, Giffard
,, Gris d'Hiver Nouveau
,, Jalais
,, Kennes
Beurré Kossuth
,, Knight
,, Loisel
,, Millet
,, Moiré
,, Preble
,, Rance
,, St. Amand
,, Samoyeux
,, Superfin
Bezi de la Pierre
,, Incomparable
,, Vaet
Bloodgood
Bon Roi René
Bonne Antonine
,, Thérèse
British Queen
Calebasse de Bavay
,, d'Eté
,, Leroy
,, Vert
Cambacères
Charles Frederick
Cherroise
Church
Chypre
Columbia
Comte d'Egmont
,, de Flandres
Comtesse Chambord
Cornemuse
Cross
Cushing
Délices de Hardenpont d'Angers
Dix
Dr. Lenthier
Downton
Doyenné Downing
Duchesse de Brabant
,, de Mars
Dupuy Charles
Eyewood
Ferdinand de Lesseps
Fondante de Moulins Lille
Gendebien
Golden Russet
Grand Soleil
Heathcot
Incomparable Oswega
Ives
Jean de Witte
Jewess
Jules Bivort
,, Liron d'Airolles of Gregoire
,, ,, of Le Clerc
Kingsessing
Lammas
Lieutenant Poitevin
Louise de Prusse
Madame Baptiste Desportes
,, Durieux
Marie Louise
,, Parent
Maurice Desportes
Millot de Nancy
Monarch
Moyamensing
Naquette
Osband's Summer
Ott
Paternoster
Petite Victorine
Philadelphia
Pinneo
Présent Van Mons
Prince of Wales
Puebla
Rameau
Ravut
Raymond de Montelaur
St. Germain Gris de Rouen
Sdeguata
Seckel
Seigneur Dachy
Senateur Vaisse
Sheldon
Silvanage
Simon Bouvier
Souvenir Favre
Stevenstone
Styrian
Sucré Vert de Provence
Supreme de Coloma
,, de Quimpre
Tyson
Van Mons Léon Le Clerc
Victoria
Virgolieu Summer
Zephirin Gregoire

I have double-worked these this week, and trust to have a good result. And although M. Decaisne says that Pomiculteurs are given to exaggerate on this subject, I must repeat, with all due deference to the learned Professor, that my experience goes to support the fact that many sorts of Pears, although they may grow well for a few years on the Quince, will perish at no distant date, or at least become so stunted that their fruit will not be worth gathering. Pears budded or grafted on the Quince, as well as upon the Pear stock, differ very much in their constitution and in the strength of their wood; some growing strongly and freely, others making short and fertile branches. The foregoing 135 sorts are those that do worst upon the Quince, and therefore it is necessary to double graft them. There are besides over 500 sorts that do tolerably well, and under favourable conditions as to soil will grow and bear well for twenty years or more. There are about 500 other sorts that grow pretty freely, and will last for over fifty years and bear well. Besides these there are about 500 sorts in my collection that grow, I may say luxuriate, and I have no doubt would go on bearing healthy fruit for 100 years. The 135 sorts already named are all of first quality. The others include sorts of all qualities. If it will be of any interest to the readers of The Garden, I will give a selected list of all the kinds that are of first quality, and that grow freely and bear abundantly on the Quince when planted in a favourable soil, *i.e.*, in a strong and rather damp loam mixed with gravel or other stones, and I would impress upon all who may desire to grow healthy Pears upon the Quince stock, to always plant their trees a little below the junction of graft and stock—about 2 inches is my own practice, some I know say that the Pear would root above the graft and so render the Quince stock useless, but this is only a rare exception to the rule of their not doing so with me. During twenty years' experience with thousands of trees, and with almost every procurable sort, amounting to nearly 2,000 kinds, I have met with but two instances of the Pear-graft rooting above the stock. One of these instances occurred with myself, and the other with Mr. Warner, of Leicester Abbey, who kindly sent me his tree, making me debtor to the Gardener's Royal Benevolent Institution for £1, which I enclose to you, to be handed over to that institution. John Scott.

Crewkerne, Somerset.

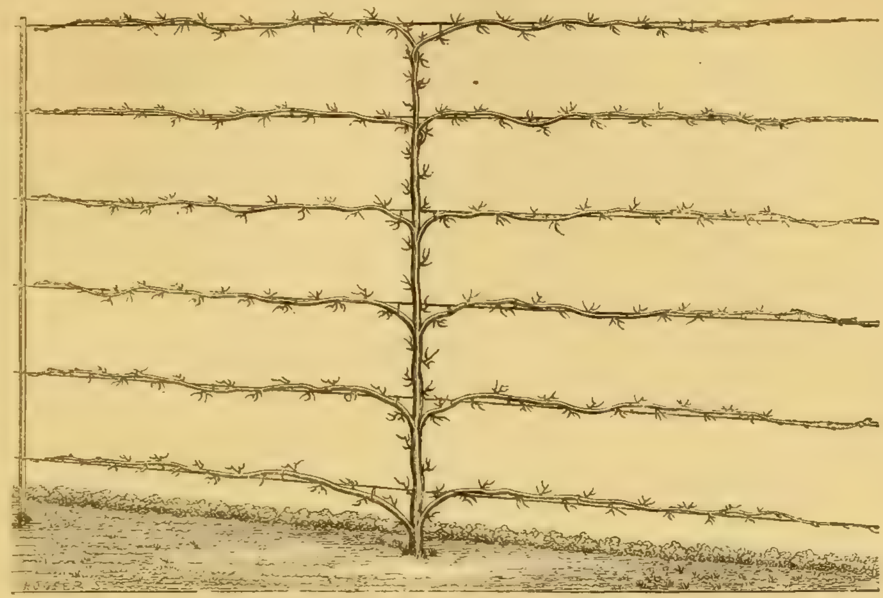
CAUSE OF PEACHES SHEDDING THEIR BLOSSOM.

Two years ago, I planted a very nice healthy Peach tree upon the back wall of a small plant house. There was plenty of room given for the roots, and the proper soil was put in. It now covers the greater part of the wall, having made good fruiting wood each year. The tree seems itself in perfect health; and was this year covered with bloom, which my gardener took great pains to fertilise with a fine brush, and followed the system which, I think, was recommended in one of your papers, viz., to keep the atmosphere low at the time of the blossoms setting. In spite of this, we are now much disappointed at seeing that the greater part of the flowers have dropped off, and I doubt whether there will be more than from a dozen to a dozen and a half Peaches upon the tree. Surely, this ought not to be the case, in a house. W. B. N.

[Owing to the dull cold weather which occurred in February and March, some varieties of Peach have set very thinly this year, even where great care has been taken to fertilise the blossoms. Without knowing the temperature of the plant house in which your correspondent's Peach tree was kept when in bloom, it is impossible to tell how the blossoms failed in setting. Peach trees, in general, never thrive well on the back walls of plant houses, when much shaded by climbers and other plants, and a damping is created through the watering of the plants, that would render the atmosphere too moist for the trees to set their blooms well in dull weather. Peach trees will set their fruit well in a night temperature from 45° to 50°, and from 55° to 60° in the day-time, in January and February, when the weather is cold. In March, the night and day temperatures may range considerably higher, that is from 55° to 60° at night, and from 70° to 75° in the day time. If your correspondent's Peach tree is planted in too rich a soil, causing it to make strong watery shoots, the bloom, though plentiful, seldom sets so well as that on trees with well ripened wood. If the cause of failure could be traced to this, I should advise your correspondent to lift his tree in the autumn, to root prune it a little, and replant in a shallow, well-drained border, with no manure of any kind in the soil.—William Tillery.]

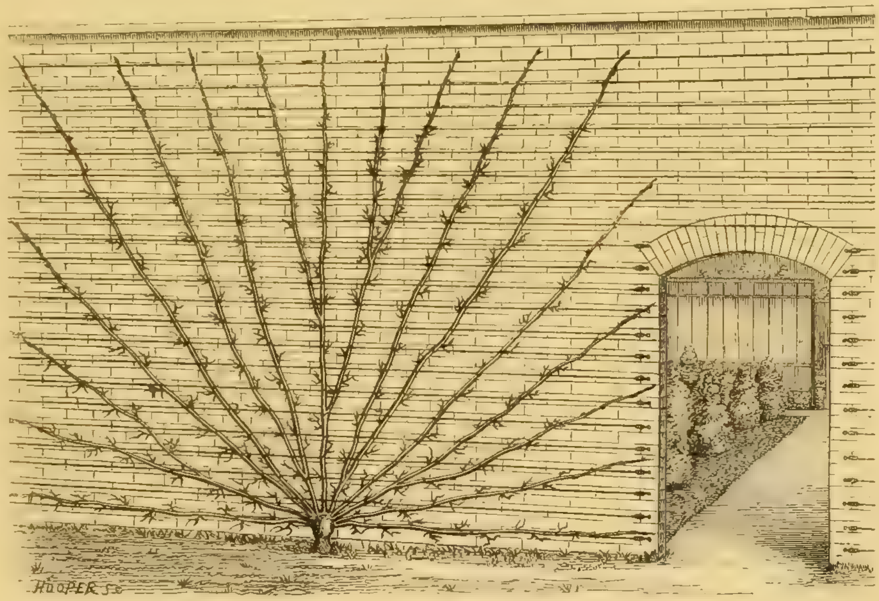
WIRE FRUIT TRELLISES.

It cannot be too often stated that we may greatly improve on the old and too common type of wooden espalier or trellis for fruit trees. It, though made of rough materials, was often expensive and usually ugly. Cheaper at first than a good wire and iron trellis, it soon proved anything but economical, on account of the frequent repairs which it required. Apart from the question of structure, a too common fault was the lowness of the old espalier; the trees on very low trellises could not attain a fair development, and required much repression. We notice with satisfaction, however, that fruit trellises are becoming greatly improved throughout the country, and this week we figure an example of a light and neat, yet sufficiently strong espalier made by Messrs. Barnard, Bishop and Barnards, of the Norfolk Iron Works, Norwich, for the Maharajah Duleep Singh, in his gardens at Elvedon, near Thetford, Norfolk. This type of trellis is equally useful for trees with their branches trained up in a vertical direction, slender laths placed vertically being used for training the branches in the desired way. The firm who have built these trellises have paid much attention to that kind of work, and have erected many good samples of such trellises.



Improved Espalier Trellis in the Gardens at Elvedon.

Equally important with the improved trellises is their improved manner of wiring garden walls, which is so good that it deserves general adoption. Several strong iron spikes are driven into the brickwork of the wall—in the right angle formed by two walls—nails with eyes in them being driven in in straight lines, exactly in the line of direction in which the wire is wanted to pass. The wires are placed at about 10 inches apart on the walls, and the little hooks for their support, also galvanised, are fixed at about 10 feet apart along each wire. The exact distance between the wires must, however, be determined by the kind of tree and the form to be given to it. If horizontal training of the branches be adopted, the wires had better be placed to form the lines which we wish the branches to follow; if the branches are vertical, we need not be so exact. The wire—about as thick as strong twine—is passed through the little hooks, fastened at both ends of the wall into the strong iron nails, and then made straight and tight by being strained with the raidisseur. The wires remain at about the distance of half an inch or three quarters from the wall. If we consider the expense of the shreds and nails, the cutting of the former, the destroying the surface of the walls by the nails, and the leaving of numerous holes for vermin to take refuge in; the great annual labour of nailing, and the miserable work it is for men in our cold winters and springs,—it will be freely admitted that a change is wanted badly. The system of wiring a wall above described, which can be applied to concrete or flint walls as well as to brick, is simple, cheap, almost everlasting, and excellent in every particular; and it must, before many years elapse, be nearly universally adopted in our fruit gardens. A man may do as much work in one day along a wall wired thus as he could in six with the old nail and shred. Shreds, in fact, can be considered in no other light than as harbours for insects.



Fruit Wall fitted with Galvanised Wire, in the Gardens at Elvedon.

Fruit Tree Trellises.—I see you have increased the number of rods used in forming the trellises, of which you gave illustrations last week (p. 236), from six to eight; and according to the engraving and your description of it, the height would exceed 7 feet and the stakes would have to be upwards of 8 feet, and *could not be purchased for one shilling* the score, any more than the trellis, so enlarged, could be *made for the money stated in the article.* It is of great importance that the top tier of branches should be within easy reach of the gardener's eye and hand, or else you will soon behold a *tête de saule* or something very like it. I tried a 7 feet espalier (Fondante d'Automne) facing the south, with a wide Grass walk behind it, but I found it better to remove the top bar. It is now about 6 feet 4 inches; all my other espaliers are of the heights I recommended, viz., 5 feet for ordinary purposes, and for southern aspects, with a walk along the north side, 6 feet.—B. S.

KEEPING LATE GRAPES UPON THE VINES.

It has frequently been asserted that keeping late Grapes hanging upon Vines long after they are ripe exhausts the Vines, and is a fertile cause of shanking, and other evils to which Vines are liable. One writer even goes the length of saying that the practice is as injurious to the health of the Vines as early forcing. That late Vines can be killed by over-cropping, like others, there is no doubt; but I do not think there is one tittle of evidence to show that Grapes hanging late is in the least injurious—even though the fruit may hang till the buds are breaking. The Vines will doubtless bleed if the bunches are not cut off before the middle of March; but that is quite another matter. The time when fruit of any kind acts upon the energies of the plant is when it is swelling, or notably when it is stoning or forming its seeds—the period when shanking begins in Grapes. When Peaches, Cherries, and Plums drop their fruit, and the time generally when all kinds of fruits thin themselves naturally; but Grapes hanging upon the rod after they are ripe are no more burden to the plant than the leafless branches themselves. How can they be? Growth and maturation are completed, and there is no demand upon the Vine. True, the bunch retains its vitality; it will die eventually, as a shoot will if it is cut off the Vine; but further it apparently costs the plant no effort whatever, hang as long it will. Grapes lose flavour every day after they are severed from the Vine; there is no doubt about this, whatever may be advanced to the contrary. Therefore, where the only object is to save the Vines, let the fruit hang as long as possible, for no injury may be apprehended. Bottling has not by any means been uniformly attended with success, even under the most favourable conditions, and it should therefore be a last resource.

I have, perhaps, had as much experience with late Grapes and their keeping as most people. Fifteen years ago, and for years after, I had to do with what was probably the first house entirely devoted to such varieties as Lady Downes Grape in this country, and I can say that year after year, for twelve years to my knowledge (and up till this date for anything I know), those Vines were heavily cropped, and the fruit was never cut till just a few weeks before starting, to prevent bleeding; yet there was never the slightest diminution of vigour in the Vines. Since then, many well-authenticated instances of late hanging, in conjunction with unabated vigour for a series of years, have come to my knowledge, leaving not the shadow of a doubt on my mind in regard to the matter. The late Vinery here has been cropped regularly for the last seven years. During that time shanking or other evils have been unknown, and, though the fruit has been left hanging upon the Vines every year till the end of February or beginning of March, their vigour is remarkable, if heavy, well-finished crops, robust wood and foliage, are any criterion. Such varieties as Lady Downes and Black Alicante are not fit for dessert while such kinds as the Black Hamburgh and others are in season; in fact, they are acknowledged by all to be very indifferent in flavour, not to speak of their objectionably thick skins. It is therefore of some importance to have these in the best condition possible, and this cannot be secured in any way so well as by leaving the fruit to hang upon the Vine as late as is practicable. Much has been written about inside borders for early Vines; but I have come to think that such are quite as necessary for late Vines. A number of the Vines in the late house here are planted entirely inside, and the superior manner in which the fruit keeps upon these, compared with those which have their roots outside, is so marked, that I have decided to fill the house wholly with the former, and do away with the outside ones altogether. J. S. W.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Flavouring Forced Strawberries.—When my Strawberries are nearly coloured in the hot-house, I shift them to cool Vineries where they get abundance of air, a plan which improves their flavour vastly. "Your Strawberries are first-rate" said my employer a few days ago, "both in colour, flavour, and size." Keens' is still the best Strawberry for forcing.—G. R.

Peach Trees from Seed.—In the United States of America Peach orchards are now, almost without exception, stocked with seedling trees, a practice which of late years has become quite general amongst growers for the Melbourne market. The tendency of some of the best varieties, the Royal Kensington for example, to reproduce themselves true from seed is well known to old cultivators. Since the Peach was badly affected about four years ago, the practice of raising trees from selected seed has become very general, in consequence of the apparent hardiness of those that were unworked.—Australasian.

Frost and Peach Trees.—The fruit growers of St. Joseph have found out that fruit buds can sometimes endure a lower temperature than they supposed prior to 1872. The limit up to that date was 16° to 18° below zero for Peaches, and 20° for Apples, Pears, Cherries, and Plums. But though the mercury in 1872 marked 22° and 24°, a fine crop of Peaches was grown last year, and hence good hopes are entertained that the still greater cold of 1873 will not prevent another good crop. Much depends no doubt upon the maturity of the wood and the buds when winter begins, a late fall growth with a sudden change to winter leaving the trees in a bad condition for resisting the effects of severe cold.—*Albany Cultivator.*

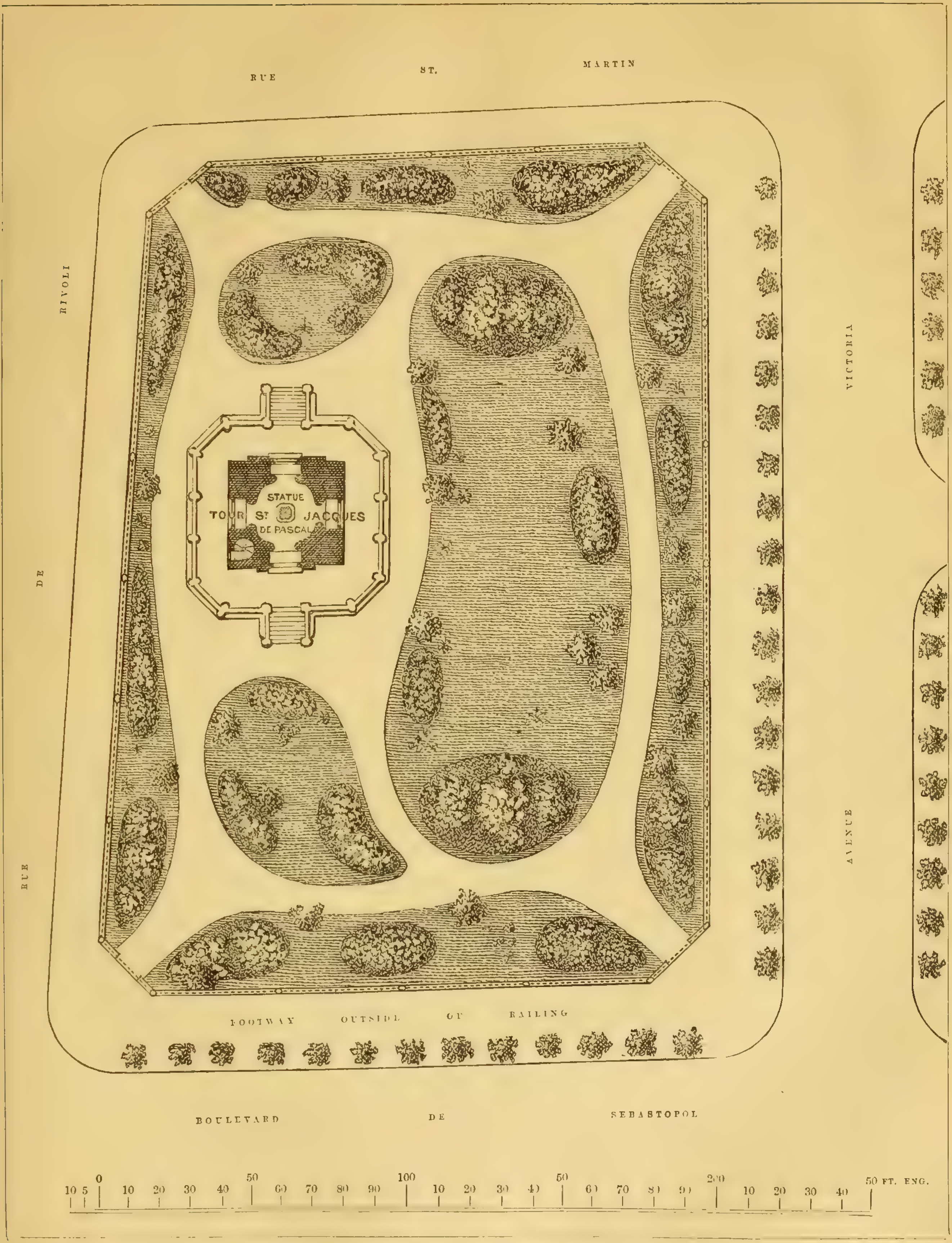
TOWN GARDENING.

TOWN SQUARES AND PLANTING.

Paris has been much more fortunate of late years in the formation of small ornamental pleasure-grounds in the heart of the city than London. There was a time when foreigners were struck with our "Squares," and their small oases of tolerably green turf and trees growing in spite of the smoke-plague, in the midst of our vast wilderness of dingy bricks and mortar. These "Squares" of ours were imitated in Paris, even to the name, but at first not with entire success. Of late years, however, the progress of the French town landscape-gardeners has been so much more rapid than ours, and the skill and study bestowed upon all the features of town gardens so much greater, that our poor Squares, which originally served as the models for the small town pleasure-grounds of Paris, seem in comparison to grow every day more dingy and desolate. In Paris, on the other hand, every year has exhibited progress in the treatment of small town gardens and ornamental plantations. The edgings of fresh Ivy, the choice and well-grown plants introduced into the borders and in front of the plantations, even in March, a time when the flower borders of Hyde Park are still desolate, and strewn with the wreck of the past season's flowers, rotting on the as yet untouched surface, are sufficient evidence of the energy and skill of those entrusted with the horticultural embellishments of Paris. Annexed is a plan of the nicely kept ornamental grounds which surround the noble old gothic tower of St. Jacques, on the eastern side of the Boulevard de Sebastopol. It cannot fail to be seen at a glance how superior the laying out is to that of any of our own squares and pleasure-grounds.

The plan of the garden of St. Jacques at once suggests one of the features of superiority which distinguish the best plans of this kind, namely, the open centre. In nearly all Paris pleasure gardens the central space is thus kept open, by which means an effect of far greater extent is produced, than when, as with us, the centre is generally occupied by a raised mound densely covered with shrubs. A central mass of that kind at once cuts the space in two, and causes the ground to lose, in appearance, half its dimensions. This curtailing of the apparent size of our town pleasure grounds, which rarely sin on the score of too great dimensions, is an old stereotyped form of plan that ought to become obsolete as soon as possible. It will be seen that the oval lawn of the St. Jacques garden is not broken up by a single tree or flower-bed in the centre, along its entire course. The breaks effected by foliage occur only at the extremities, and along the smaller strips of green at the external boundaries of the enclosure. This keeping open of the central portion is the one secret in lawn-planning, which ought always to be scrupulously observed; for, in addition to its pleasing effect, it gives that breadth of character and grand simplicity which should never be lost sight of in making designs for ornamental gardens, where a general effect of openness and light are the chief desiderata, as in town gardens. It will be noticed also that in the plan of the garden of St. Jacques there is no geometrical repetition of forms; all is easy, and in its flow of graceful lines is made to fall into an apparently unsought conformity with the proportions and other exigencies of the site.

The line of trees at the edge of the footways outside the enclosures is also a pleasing feature. There, as well as in other parts of Paris, such lines of trees have a refreshing and delightful effect in summer, when every yard of shade is so desirable, and when even the mere aspect of the green seems to produce an agreeable coolness. There are many small squares in the heart of London, the enclosures of which might be removed with advantage—the impossible turf be dispensed with, and detached trees planted, either in regular positions, or in picturesque irregularity; beneath which there should be handsome stone seats, and the whole space should be freshly gravelled with bright red gravel every three months, both in summer and winter. Spaces so planted and kept would often produce a most agreeable and, to Londoners, a novel effect. But to return to such rows of trees as those outside the enclosure of St. Jacques; it may be suggested that many of the enclosures of our larger squares are susceptible of being varied


RUE ST. MARTIN
RUE DE RIVOLI
AVENUE VICTORIA
STATUE
TOUR ST JACQUES
DE PASCAL
FOOTWAY OUTSIDE OF RAILING
BOULEVARD DE SEBASTOPOL
10 5 0 10 20 30 40 50 60 70 80 90 100 10 20 30 40 50 60 70 80 90 200 10 20 30 40 50 FT. ENG.

A WELL LAID OUT CITY SQUARE.

by an external feature of a similar kind. Lincoln's Inn, for instance, might certainly be embellished by rows of trees at the edge of the footway, and the open space being large and light, they would, in all probability, flourish luxuriantly if carefully planted. There are several other spaces sufficiently open to admit of such features. Only to name one, what a fine effect might be produced by the planting of two oriental Planes at the top of Langham Place, one on each side of the entrance to the elegant church, with its exquisitely simple steeple, which terminates the vista, and which is considered by many architects the undoubted masterpiece of Nash. The severe character of the acuminating lines of that elongated pyramid, shooting upwards between the green foliage of two noble trees, as it would appear some years hence, would form such a picture as travelling artists in search of the picturesque would not fail to transfer to their sketch-books. It would inevitably become one of the subjects engraved over and over again in tourists' books, entitled "Guide to the Beauties of London," or called "The more celebrated monuments of the great metropolis, described and illustrated by eminent writers and artists;" while at present there is certainly not a single picturesque element in the aspect of Langham Place, for even the artistically designed church and steeple look so bleak and bare for want of support that their real beauties cannot be fitly appreciated. H. N. H.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—The bright weather which we have lately experienced has considerably forwarded the blooming of spring flowers; Crocuses are now everywhere in full bloom, and Hyacinths are pushing up their flower-spikes, whilst Sweet Violets, Dog's-tooth Violets, Daffodils, Narcissi, Scilla sibirica, blue and white, Grape Hyacinths, blue and white, Daisies, Wallflowers, Aubrietias, Arabis, Hepaticas, Pansies, Primroses, and others are all coming beautifully into flower. Turf may yet be laid, lawns formed and sown, top-dressed if required, rolled, swept, and mown. Edgings for flower beds, borders, or walks may now be formed; if the latter are to be of Ivy, the green-leaved Irish kind is the best. In planting, if from pots, disentangle the roots, and stretch out the shoots, pegging them down at intervals, when they will emit roots freely along their stems during summer. The variegated Vine (Vitis heterophylla) makes a very pretty edging, or, if supported by means of a few stakes, it may be grown so as to form a clump; it is also a plant well suited for forcing for indoor winter and spring decoration. Periwinkles make good edgings or carpets under the shade of trees where Grass will not grow, and they may now be lifted, divided, and transplanted for that purpose. The variegated Euonymus radicans, Japanese Honeysuckle, and Santolinas, all form excellent hardy edgings, equally as suitable for summer and autumn decoration as for spring ornament, and they may now all be transplanted. The red-leaved Ajuga, variegated Arabis albida and lucida, Cerastium Biebersteini and tomentosum, Campanula carpatica and a few others, Gentiana acaulis, Achillea tomentosa, variegated Alyssum saxatile, the Aucuba-leaved Daisy, and the green-leaved double-flowered Daisies, Viola cornuta, lutea, and some others, Gnaphalium lanatum, Veronica incana, Stachys lanata, Dactylis glomerata, various Saxifrages and Sedums, and most of the Sempervivums, the variegated Polemonium cæruleum, and several other plants, are very useful as permanent edgings to flower-beds, and when once planted require but little trouble beyond lifting now and then, say once in two years, and rectifying blanks from a reserve stock. Plant out Hollyhocks as back lines to borders, or 4 feet apart in large beds, so as to permit Dahlias, Salvias, &c., to be planted between them. Plant out Pinks, Carnations, Pansies, and a few other hardy plants wintered in frames. If not already done lift overgrown herbaceous plants; divide and replant them in good well-manured soil. Any somewhat tender bulbous plants peeping through the ground are benefited by a mulching of cocoa-nut fibre. Sow seeds of all kinds of annuals on a warm border, and Mignonette and a few other plants that do not like being transplanted should be sown where they are to bloom. Roses of all kinds may now be pruned, using discretion in the operation, for strong growing kinds should not be too severely pruned, whereas stubbier growing sorts may have their shoots shortened to the third or fourth eye, removing at the same time all superfluous wood.

Greenhouse Plants.—Humea elegans makes a fine conservatory ornament in summer, and for this purpose some of the strongest plants that can be obtained may be potted in 6, 8, or 10-inch pots, according to their strength, or two plants may be put into each pot, placed in a warm part of the greenhouse, syringed daily, and liberally fed with manure water. Roses in pots for blooming in May should be syringed twice every day, and mulched with well-decayed manure. Transfer all plants in flower to the conservatory, and keep up regular successions. Heaths should now be repotted without further delay, as should also Polygalas, Eriostemons, Leschenaultias, Croweas, Boronias, Chorozemas, &c. Azaleas should be trained and placed so that all sides of the plants may be equally exposed to the light. All decaying leaves should be removed and a syringing given with well diluted tobacco-water now and then, for the purpose of keeping down thrips. Half-hardy Ferns may now be potted and placed in light frames for a time, or in favourable positions in pits or houses. Greenhouse Palms should likewise be repotted, using good yellow loam, rotten manure, and a little peat for some of the kinds, which should be set in a warm portion of the house. Of bulbous plants, such as Hyacinths, Tulips, Narcissi, and Crocuses, which are now beautifully in bloom, a selection should be made for next year of such kinds as give most satisfaction. The following we have found to be suitable either for purposes of exhibition, growing in windows, or for the decoration of the conservatory, viz.:—

Single Hyacinths.—*Dark Blue*—General Havelock, Feruck Khan, Bleu Aimable, Prince Albert, Argus, Baron Van Tuyll. *Deep Red*—Général Pelissier, Solfaterre, Mrs. Beecher Stowe, Macaulay, Von Schiller, Lina. *White*—Mont Blanc, Snowball, Baroness Van Tuyll, Paix de l'Europe, Alba maxima, Queen of the Netherlands. *Blue or Mauve*—Leonidas, Marie, Grand Lilas, Lord Palmerston, Orondatus, Charles Dickens. *Red or Pink*—Gigantea, Grandeur à Merveille, Mammoth, Lord Wellington, Cavaignac, Fabiola. *Yellow*—Ida, L'Or d'Australie, La Fleur d'Or, Bird of Paradise.

Double Hyacinths.—La Tour d'Auvergne, white; Louis d'Or, yellow; Noble par Mérite, red; Czar Nicholas, rose; Frederick the Great, red; Grootvoorst, rose; Princess Royal, rose; Laurens Koster, blue; Bloksberg, blue; Garrick, blue; Lord Wellington, blue; Lord Nelson, blue.

Tulips.—*Single*—Keizerkroon; Pottebakker, white and yellow; Thomas Moore, Canary Bird, Belle Alliance. *Double*—Duc Van Thol, Gloria Mundi, Imperator Rubrorum, La Candeur.

Narcissi.—Bazelman major, Newton, Queen of the Netherlands, Gloriosa, Apollo, Double Roman.

Crocuses.—Albion, Caroline Chisholm, Sir Walter Scott, Mammoth, Garibaldi, Queen Victoria.

NURSERIES.

Indoor Department.—Everything now under glass is starting into growth, so that a regular steady temperature, a moist atmosphere, and plenty of water at the roots, must be maintained. Shading from bright sunshine should be applied. Testudinarias are throwing out their shoots vigorously; therefore supply them liberally with water, and give the shoots something to adhere to in the form of a branch, a stake, or a string. Enwrap the stems of Tree Ferns with sphagnum, and syringe them twice every fine day, taking care not to damp the crown too much, otherwise the young fronds are apt to rot. Continue to pot stove and greenhouse Ferns, confining them to moderately small pots. Seedlings from amongst the Orchid pots, benches, paths, and other places where young Ferns spring up naturally, and those from seed-pans, should be potted in small pots. Selaginellas, Isolepis gracilis, Panicum variegatum, Convolvulus mauritanicus, and a few other plants may be divided, planted or potted in light soil, and kept for a short time in a close part of the house; indeed they may be placed under the stages and have a handglass placed over them to maintain an equable moist temperature. Filmy Ferns may be potted in the same way as others, but they must receive a watering overhead previous to being put into the case. Hardy Ferns may be transferred from their winter quarters to cold pits, or to sheltered places between the walls of glass houses. Orchids are now growing freely; therefore gradually increase the heat and water supply, and protect the points of young roots and also flower-spikes from woodlice by means of cotton wool, poison, and different kinds of traps. Phajus, Calanthes, Limatodes, Thunias, &c., require a rich and substantial soil, such as a mixture of yellow loam, rotten dung, and leaf-mould, to which should be added some sand or peat. Trichopilias, now that they have almost done blooming, may be repotted in rough peat, raised a little above the level of the pot; water them moderately, and keep them in the Cattleya house. Repot Masdevallias in peat and sphagnum, and keep them moderately moist in a cool pit; if they have been wintered along with Odontoglossums they should now be placed at the coolest end of the house, or else put into a shady pit by themselves. Maxillarias may be treated precisely the same as Masdevallias, both being increased, if necessary, by division. Miltonias, Oncidiums, and others are increased by division and specimens of these, as well as of Cypripediums and others, are made by putting several small plants together in a large pot or pan. Dendrobiums that have been lately imported, and that are now emitting roots along their stems, may be cut up into pieces, each having a bud, and used for propagating purposes. Newly-imported Orchids must not be too much excited; plant them in crocks only, or lay them on their sides on some shell or gravel, or keep them attached to the blocks on which they were imported until they begin to grow. Terrestrial kinds are best cleaned and potted immediately after arrival, and kept quiet for a time. Phalænopsis come home in excellent condition affixed to 2-inch pieces of wood, two inches in diameter, and about two feet in length. Do not disturb them after arrival until growth begins; then saw the pieces of wood into short bits, each having a plant on it, and hang them up with wire to the roof, or wherever other hanging plants are placed. Divide the roots of Costus elegans, repot them in small pots, and keep them in a warm, shady part of the stove for a time. Start Erythrinas in a warm pit or stove, keep them near the light, and water them sparingly at first, transferring them to a cooler house after the shoots are a few inches in length. The young shoots may be taken off and struck like cuttings in heat. Imported Cycad roots may be potted, and the pots should be plunged in a tan-bed, or other place where a very gentle heat can be afforded them. Repot all small plants of Anthurium Scherzerianum in a compost of peat, chopped sphagnum, silver sand, and a little charcoal; some prefer a little yellow loam mixed with the peat; plunge them in gentle heat, and shade them from bright sunshine. Plants of Toxicophlæa coming into bloom should have a mulching of manure put over the pots to assist their development. Start Hydrangeas into growth, use the young shoots for cuttings, and pot off autumn-struck cuttings of them. Japanese Lily seeds may now be sown in pans set in a warm pit, and after they germinate the young plants may be transferred to a cool house. Start old bulbs into growth, according to their strength and the purposes for which they are required, by introducing them into warm pits, but water them at first sparingly. Late-struck Chrysanthemum cuttings should have their points pinched out, and after they are hardened off a little they should be potted singly and placed in a moderately cool house. Autumn-struck cuttings of Ixoras, Gardenias, Euonymus, Azaleas, Passifloras, Pentas, Hoyas, &c., should be potted singly as soon as accommodation can be made for them. Young Azaleas, Camellias, Cytisus, Citrons, &c., should now be placed in pits by themselves; they like a tolerably brisk temperature, plenty of moisture, and shading from bright sunshine. Under such circumstances young wood is produced early, and by means of three successive pinchings during the summer, good plants are soon obtained.

Indoor Fruit Department.—Such Pine plants as are ripening fruit should be taken out from amongst the others and placed in a portion of the pit by themselves, where light and air are more plentiful and the humidity less than would be the case under ordinary circumstances. For Pines in active growth maintain a temperature of from 70° at night; give a little air during the day, and shut up the pits a little before three o'clock in the afternoon, when a gentle dewing from the syringe will be beneficial. Keep the atmosphere moist by sprinkling the passages and walls and keeping the steaming trays constantly charged with water. In early Vineries, where Grapes are beginning to colour, a good watering should be given to the border if inside, mulching it over at the same time with some well decayed manure, so as to render additional watering unnecessary until the fruit is ripe. Continue the thinning of berries, the pinching of shoots, and the regulating of growths, as occasion requires. Muscat Grapes in flower ought to have a temperature of 75° at night, and Hamburghs 5° less. Peaches and Nectarines that have passed the stoning period may be kept at a night temperature of 65°. Give them also plenty of air and moderate supplies of manure water. Remove useless growths, and tie in those required for next year's crops; syringe freely with tepid water twice a-day, and keep a sharp look-out for red spider and mildew. To pot Figs give frequent waterings with manure water, and even a mulching of manure on the surface of the soil invigorates and enlarges the fruits. Pinch the young shoots at the fourth joint, and regulate the quantity of fruit. Early Melons will now be in flower, therefore fertilise the blossoms when there is a sufficient quantity for a crop on the plants. Until the fruit has set, keep the pits well aired and the plants moderately dry, but afterwards maintain a night temperature of 70° or 75°, both for Melons and Cucumbers, and supply the latter freely with water, and when their roots appear above ground, surface dress with an additional 2 inches of rich compost. Continue to introduce successional quantities of Strawberries, and remove to cold frames, and, after a time, plant out those from which fruit has been picked. Such vegetables as have hitherto been forced indoors may now be obtained from the open ground. New Zealand Spinach may, however, be grown under glass for planting out next month.

THE KITCHEN GARDEN.

HOME-RAISED POTATOES.

After having given an unbiassed opinion respecting the American Potatoes, I beg to notice such British kinds as have possessed, or will yet possess, a higher reputation. No nation in the world can surpass us in the possession of good Potatoes, and these have been raised for us by those who have made Potato growing and improving the great object of their lives. Perchance in our eager search for quality, we may have lost some of that robustness which formerly characterised our Potatoes, and which is still characteristic of all new importations; but in that case gross growth has been exchanged for quality of the tubers; therefore the balance still remains greatly in our favour. The least advance, however, has been made in respect to that important section—the Early Kidneys. If any one can obtain a good strain of the old Ashleaf Kidney, I feel persuaded that they will produce crops as good and as satisfactory as will any of the more modern selections. Myatt's Kidney is strictly an Ashleaf, and it is a great favourite with the market gardeners, because it is rather the best cropper; but Royal Ashleaf, which is identical with the Improved Ashleaf (and both are good strains of the old Ashleaf), is earlier and better for cooking when lifted, although, as a rule, the tubers are not quite so large. Alma, which is evidently a seedling, is an Ashleaf rather distinct in growth from the others, and one that can be highly recommended, as can also Lee's Hammersmith Kidney, which produces large tubers, and is a heavy cropper. Another new and evidently distinct kind is Early Ranelagh, a kidney of the Ashleaf type, but having a rough netted skin; it is one of the earliest kinds, a good cropper, and boils whiter than most others of this particular section. Some of the new kinds are of better quality than the old Ashleaf, but certainly in no case are they earlier, whilst their cropping qualities have not been sufficiently ascertained for a final decision either in favour of or against them. In this section considerable improvements are yet requisite, for we also want tubers that, when cooked, are white and flowery like Dawes' Matchless, or we want the Lapstone engrafted on an Ashleaf growth, and with all its features of early ripening. Our best early round Potatoes are Turner's Union, a white-skinned kind, combining the earliness of the Shaw with some of the better qualities of the Regent; Scotch Blue, a very handsome shaped tuber of excellent quality and the whitest of flesh; Onwards, one of Mr. M. Fenn's old seedlings, and a most delicious Potato; and Early Red Emperor, alias Main Crop, a red-skinned variety that is a great improvement upon the Fortyfold, and without exception the most handsome round Potato that we possess. Mr. Fenn, who occupies amongst Potatoes that position as a raiser that Mr. Laxton does amongst Peas, has now some new early kinds that promise to be great acquisitions to those who can appreciate high quality in Potatoes. In his Early White Kidney is presented one of the best and whitest of early sorts, and an excellent cropper. Amongst round Potatoes his Eliza Fenn and Early Market, with a few others, possess an excellence that must make them eagerly sought for, whilst his Rector of Woodstock, a new second early round, extremely handsome and first-rate Potato, has already received high awards, and must eventually become a great favourite. In English Rose Mr. Fenn has a round and handsome kind, and his new red-skinned Kidney Bountiful is not only an immense cropper, but is, without exception, the most handsome red-skinned exhibition Kidney that can be found. The mention of these will sufficiently indicate what that gentleman is doing to promote Potato improvement, and when we remember what Bell & Thorpe, Paterson, Taylor, and others have done for the same cause, we have reason to rejoice that Potatoes are not likely to deteriorate in our hands. Second Early Kidneys present to the gardener possibly the most valuable section from which to select stocks for the main crop, and from these none are superior in all general excellence to Waterloo, Beaconsfield, an early Lapstone, Dawes' Matchless, Excelsior, King of Potatoes, King of Flukes, and President, all of which are heavy croppers and have handsome smooth tubers in which there is no waste, whilst their qualities, though of a high order, still differ enough to satisfy the most divergent tastes. They will, with ordinary care, keep until new Potatoes are ready for lifting in June.

A. D.

New Tomatoes.—The Trophy came out first best in a trial of field culture of Tomatoes, on the grounds of the Illinois University last season, being as Mr. Vickroy reports, "at least 75 per cent. better than anything we have tested." The next most satisfactory were New York Market and Early Smooth Red.—*New York Tribune.*

American Potatoes in England.—I agree with "A. D." in his remarks on these in p. 238 of The Garden, with the exception of what he says respecting the Potato called Climax, which he describes as a large, coarse, deep-eyed tuber, never handsome, The variety I have got under that name is quite the reverse of that, being slightly oblong, perfectly level all over, and so handsome that it is termed here the "Pretty Potato."—R. Gilbert, *Burghley.*

CULTURE OF PARASITES.

(MISTLETOES.)

When staying a short time ago at Matlock, I took the opportunity of visiting the nursery of Mr. Smith, of Darley Dale, and among other interesting objects there, I saw some fine specimens of Mistletoe growing upon certain Apple trees. The parasite in question is doubtless Viscum album, but, although closely allied, and in general appearance closely resembling Loranthus europæus, which is parasitic on the Oak in Central Europe (especially about Vienna), the floral and frutescent differences definitely separate the two; and as the former is generally found on the Apple, Pear, Poplar, &c., and rarely, if ever, on the Oak, of which the latter is the especial parasite, it seems probable that the Loranthus is the true Mistletoe of the Druids, and to an ordinary observer differs from Viscum album only in the berries being yellowish instead of pearly white; the flowers of the one are sessile, and those of the other pedunculate. The relationship of both these parasites to our invaluable town shrub, the Aucuba, is significant of possibilities in the way of growing them in our suburban gardens, which it is to be hoped will be made the subject of patient and careful experiment, especially as the approaching exhibition at Vienna will afford facilities for horticulturists to go over there, observe the Loranthus *in situ*, and procure plants and berries. "The propagation of the ordinary Mistletoe in British nurseries," says Loudon, "has scarcely been attempted, but nothing could be easier on Thorns or Crab Apples planted in pots for convenience of removal. Perhaps if it were propagated on shoots of the Poplar or Willow, truncheons of these trees with plants of Mistletoe on them might be taken off, and planted as cuttings, without injuring the parasite."

Allow me to ask—Do any of your readers know of any Oak tree in England on which Mistletoe is growing, and if so, will they take the trouble further to ascertain whether it is not Loranthus europæus and not Viscum album? To say simply it is the Mistletoe is not sufficient. How curious it would be if it were discovered that the true Druidical plant had disappeared from Britain, as Papyrus antiquorum is reported to have disappeared from the Nile; and if the former were this year to be reintroduced to England from Austria, and the latter restored to Egypt from an English or French conservatory. For any one who has leisure and opportunity for a little archæological research and cares to definitely settle a moot point, I would suggest the collection of evidence as to whether the Druidical Mistletoe had white berries or yellow ones, and whether there exists any sculptural or pictorial representation showing the flowers or berries with or without a footstalk. Seeds of the ordinary Mistletoe have been ascertained to germinate with facility, irrespective of a nutritive nidus, the only apparent condition of success being a suitable degree of humidity. Du Hamel (possibly with an idea that the plant was epiphytal and not parasitic) made Mistletoe sprout on dead branches, bricks, tiles, stones, soil, &c., but they merely sprouted and did not live. M. du Trochêt actually sprouted them on the frame of a window and observed that the radicles directed themselves towards the interior as if in quest of darkness. Loudon observed that germinating on the upper side of the branch of a Lime tree the shoots tended upwards; those on the under side downwards. Since these and other patient observers made their experiments Wardian cases have been invented and popularised. Let us hope that some of the many who possess one will take up the study of this curious plant for the cultivation, preservation, and close observance of which the Wardian case affords facilities formerly unknown. The plant has already been ascertained to be a true parasite and not an epiphyte, *i.e.*, it can only grow and increase at the expense of such living tissue as its roots may attach themselves to for food as well as mere support; its rhizomata traverse the inner bark and have a tendency to re-assert and develope themselves in a way that may be popularly described as "throwing up suckers." Finally, I see no reason why the two similar but yet different plants—Viscum album and Loranthus europæus—both of the same natural order (Loranthaceæ), to which order also the Aucuba was at one time thought to belong, should not be easily grown in a Wardian case, and so become objects of universal interest, both social and scientific. Imagine the charming appearance of a pot specimen Aucuba in fruit with Mistletoe also in fruit upon it! The prizes and high prices obtained for novelties ought surely to tempt nurserymen to try for the production of this desirable probability. To the vegetable physiologist I deferentially suggest an attempt to convert a parasite into a terrestrial plant, by germinating or engrafting the Mistletoe on the roots of a seedling Aucuba. Those who possess Orchid houses have every facility for experiment upon the exotic species of India and South America, such as Viscum opuntioides (V. attenuatum?), which might be procured from Bombay, as it is common on many kinds of trees at Mahabuleshwar, especially towards the Rotunda Ghaut; or, preferably Loranthus obtusatus, L. longiflorus, L. amplexifolius, L. lagaeniferus, &c., which may be found on Mango and other trees at that easily accessible place—Khandalla; the flowers of some of these are showy enough to claim admission as flowering plants, especially L. amplexifolius, which the natives call "Baingoolee" (with red flowers), L. longiflorus, with flowers like a Honeysuckle. The rarer species—L. obtusatus—may be found at the Rotunda Ghaut, Mahabuleshwar; it flowers in long racemes. Let me further add that the habitat of these plants, Mahabuleshwar, Matheran, Khandalla, &c., are the hill stations near Bombay, to which Europeans resort in the hot season; but, although many who may read this, and have friends there, may think it an easy matter to procure them by merely writing out to them, it is very difficult indeed, as I know, from personal experience; and I suggest that residents at these sanataria be requested to offer rewards to the Ghautiers for all specimens of "Baingoolee" they bring in, and that notes be taken and attached to each specimen, recording locality, tree on which found, colour and character of flowers, time of flowering, &c. The native name of the tree is quite sufficient, indeed preferable, and less likely to cause mistakes than such a vague statement as "on a kind of Ash," or "a tree like the Mountain Ash," &c., which Europeans might be only too ready to state with respect to Melia Azadirachta, for instance. Any assistance that I can give, either by detailed advice or translation of native names, is cheerfully offered to any of your readers willing to undertake the experiment. WASHINGTON TEASDALE.

Headingley, Leeds.

LAW NOTES.

Erskine *v.* **Adeane.**—This was a case respecting the poisonous properties of Yew, and the duty of persons who happen to have noxious plants, shrubs, or trees growing on their lands. The applicant's case was that he had lost thirty-six lambing ewes out of a flock of 220, and about 100 lambs, owing to the ewes browsing on the Yew trees at the side of one of the plantations on his farm. It was questioned whether growing Yew is a poison to sheep, and some instances were given in which sheep were observed to browse on green Yew with impunity. Other instances, however, to the contrary were cited; and it was said that, in the winter of 1839, a herd of more than 200 deer belonging to the Duke of Northumberland died of eating green Yew, which they got at by crossing a river on the ice. Upon the whole, the evidence seemed to support the notion that growing Yew may or may not be fatal to a cow, a horse, a sheep, or a deer, according to the strength and constitution of the animal; but that partially-dried clippings of Yew, which are in a state of fermentation, are almost invariably fatal. The Master of the Rolls was of opinion that the ewes and lambs died of eating Yew, and decided against the respondents, on the broad ground that as, between landlord and tenant, there is an implied warranty on the part of the former that the trees and shrubs which he plants or suffers to be on the demised premises shall not be noxious or injurious to the tenant, and directed an inquiry to what compensation the applicant was entitled.

Waterer *v.* **Waterer.**—This cause came on upon further consideration. The testator in it was a nurseryman and market-gardener, who died, leaving very considerable real and personal estates. The questions argued were—1st, whether certain of his devised real estates, which had been "used" by his sons as partners in his business after his death, had been so dealt with as to have become partnership property; and 2nd, whether, being such, they were converted from realty into personalty. Lord Justice James held that the real estates principally in question were so "involved" with the business as to be "partnership property," and were converted from realty into personalty, and made a declaration accordingly.

What Constitutes a Removable Greenhouse?—Will any of your readers oblige me by stating whether a wooden-built greenhouse or orchard-house, with posts let into the ground, is a tenant's property? I am aware that a tenant cannot break the soil, but I presume he may saw the posts at the ground level, thus the building would, I should think, be regarded as the tenant's. If not, I can as easily erect such a building, standing upon one course of bricks, and as to this I suppose there can be no question.—A SUBSCRIBER, *Welwyn.*

THE exquisite charm of spring's first ringing laughter
 We measure only by the winter's gloom;
 The wailing winds, the whirling snows, make room
In our half-frozen hearts for sunshine after!
If every morn were fair and all days golden,
 And only emerald turf our footsteps trod,
 Our sated souls would tire of velvet sod,
Our eyes in spells of snow-capped peaks beholden!
We gauge the flow'ret's beauty by the mould
 That lies so long and dark its sweetness over;
 As absence makes his rapture for the lover,
Who sees no light till he fond eyes beholds.
 So God be praised for wintry blasts and snows,
That end their lessons when the Violet blows!

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

(April 2.)

The weather on this occasion was exceptionally fine; but subjects of exhibition were somewhat limited compared with what might have been expected.

Roses.—These formed one of the chief features of the show. A collection of sixteen dozen cut blooms was furnished by Mr. Wm. Paul, of Waltham Cross, all of which were remarkably fine, and well deserving the extra prize which was awarded them. Conspicuous among them were Pierre Notting, Duke of Wellington, Alfred Colomb, Horace Vernet, Xavier Olibo, and Princess Beatrice. Messrs Paul and Sons, of Cheshunt, also exhibited some excellent cut Roses, amongst which were Horace Vernet (extremely fine), Fisher Holmes, Madame Victor Verdier, Baronne de Bonstetten, Duke of Edinburgh, Dr. Andry, Abel Grand, Princess Louise, La France, and Madame Alfred de Rougemont—all Hybrid Perpetuals. Of Noisettes and Tea-scented Roses, the same exhibition comprised Souvenir de Paul Néron, Marechal Niel, Souvenir d'Elise, Vardon, Catherine Mermet, Cheshunt Hybrid (fine), Belle Lyonnaise, Narcisse (fine), and Madame Villermoz. The new Tea-scented Rose, called Cheshunt Hybrid, was also exhibited by Messrs. Paul and Son. It is purplish-red in colour, large, very double, and powerfully fragrant. Messrs. Veitch and Sons contributed a group of well-flowered Roses in pots, also a large and fine collection of cut Roses; amongst them were Duke of Edinburgh, Mrs. G. Paul, Abbé Bramerel, Prince Camille de Rohan, Madame Lacharme, Madame Levet, and others. Groups of President Thiers, Richard Wallace, and Lyonnaise were shown by Mr. H. Bennett, Manor Farm Nursery, Stapleford.

Orchids.—In the nurserymen's class for six distinct Odontoglossums, Messrs. Veitch were first with fine specimens of O. Phalænopsis, niveum majus (very fine), Pescatorei, triumphans, odoratum (fine), and Alexandræ. Mr. W. Bull was second with some good plants, especially of O. Alexandræ. In the amateurs' class for the same, Mr. W. Denning was the only competitor. Messrs. Veitch & Sons furnished a collection of Orchids in which was a specimen of Cypripedium villosum 30 inches in diameter, and laden with flowers; Angræcum sesquipedale, with four fine blooms; Odontoglossum nebulosum, with large pure white flowers, faintly marked with yellow on the lip, but having no spots on the petals or sepals: O. Halli, fine; O. pulchellum; O. atro-purpureum; Cymbidium eburneum, and others. Mr. Denning, gardener to Lord Londesborough, contributed a group of Orchids, amongst which were the extremely beautiful Masdevallia Lindeni and its orange-red congener M. ignea; a grand example of Odontoglossum hystrix; two fine plants of Oncidium obryzætum; Warscewiczella discolor; Dendrobium aggregatum, with pretty yellow flowers; Trichopilias, and other beautifully-flowered plants. From Mr. Fairbairn, Peterborough House, Fulham, came a group of Orchids in flower, among which was a large and well-bloomed specimen of Cypripedium villosum, a nice plant of C. hirsutissimum, a good plant of Aerides Fieldingii, with two fine flower-spikes; Cattleya Skinneri, with two good spikes; an extremely well-grown plant of Anæctochilus Lowii, and one or two others.

Cinerarias.—Good specimens of these were exhibited by Messrs. Dobson & Sons, of Isleworth, who gained the first prize in the nurserymen's class for nine, and Mr. James, of Isleworth, was equally successful in the amateurs' class for six. A collection of very beautiful Cinerarias, with large well-formed and brilliantly-coloured flowers, was also shown by Messrs. F. and A. Smith, of Dulwich.

Miscellaneous Plants.—From Messrs. Osborn & Sons, Fulham, came a remarkably fine group of these; conspicuous amongst them were some good varieties of Anthurium Scherzerianum, one especially being remarkably fine; also an excellent plant of Maranta Makoyana, Pandanus Veitchii, Dieffenbachia Bausei, some graceful and elegant little Palms, particularly Demonorops fissus, and other flowering and fine foliaged plants. A collection of plants, furnished by Mr. B. S. Williams, comprised some very fine Cyclamens; also, Amaryllises, Aralias, Palms, Yuccas, and some Orchids, but the most showy plant in the collection was a magnificent specimen of Imantophyllum miniatum, bearing ten wonderfully fine heads of orange-red flowers. A group of small Clematises in flower was exhibited by Mr. Noble, of Sunningdale, who, in addition to those staged for exhibition only, received a first prize for half-a-dozen distinct kinds. A group of ornamental-flowering and foliage plants was contributed by Mr. J. Aldous, Gloucester Road, South Kensington, and Mr. Croucher, gardener to J. Peacock, Esq., sent a specimen of Beschorneria tubiflora Jacobi in bloom. Mr. Ware, of Tottenham, furnished a remarkably fine collection of hardy plants in flower. Messrs. Rollisson & Sons, of Tooting, in addition to a dozen superb specimens of Mignonette, showed some very fine hardy Primulas, a basketful of the beautiful silvery-leaved Echeveria pulverulenta, and the remarkably distinct thick-leaved kind called E. Agavoides. For the best six hardy distinct Primulas, Mr. Ware was first with well-flowered plants of P. altaica, nivalis, acaulis sulphurea fl. pl., acaulis alba fl. pl., acaulis lilacina fl. pl., and acaulis var. Purity; Mr. Early, who was second, also had good plants. For six bulbous plants in flower Mr. Ware was also first with Tulipa sylvestris, Narcissus Bulbocodium, Muscari botryoides, white and blue; Scilla Ughii, and a good variety of Dog's-tooth Violet. A large collection of Narcissi was exhibited by Miss Florence M. Barr, and by Mr. R. P. Barr, 10, New Road, Lower Tooting; also by Mr. Ware, of Tottenham.

Vegetables and Fruit.—A remarkably fine collection of forced salading was exhibited by Mr. J. Hepper, gardener to C. O. Ledward, Esq., The Elms, Acton, to which a first prize was awarded. It consisted of Hardy Hammersmith, Green Paris Cos, and Grand Admirable Lettuces, four kinds of Endive, Williams' Matchless Celery, Chicory, a brace of Telegraph Cucumbers, Curled Parsley, Golden, American, and Water Cresses, Mustard, Curled Chervil, Dandelions, French Sorrel, Wood's Frame and French Breakfast Radishes, Dell's Crimson and Pine Apple Beets, Tarragon, and Corn Salad. Mr. Hepper also exhibited some good French Beans, consisting of Fulmer's Early Forcing, a dish of Figs, for which a cultural commendation was awarded, and some Princess of Prussia Strawberries. A dish of Keens' Seedling Strawberry also came from Mr. J. Miller, Worksop Manor, Notts, and a dish of Citrons from Mr. J. Lee, The Crescent, Surbiton. Messrs. Osborn showed some of their Winter White Broccoli, the heads of which were large and good. Mr. Cooling, nurseryman, Bath, also showed some of his Matchless Winter Broccoli, the heads of which were compact, white, and very fine.

Cucumbers.—For a brace of black spined Cucumbers Mr. Douglas, of Loxford Hall, was first, with a remarkably fine brace of Blue Gown, measuring some 20 inches in length. The same grower was also first in the class for a brace of smooth Cucumbers with Tender and True, each of which was longer than his Blue Gowns and quite as fine. The best white spined brace (Pizzey's Favourite) came from Mr. D. Pizzey, Fulmer, Slough; these were wonderfully fine and received a first prize.

First-class Certificates.—These were awarded to the following:

To Rose Lyonnaise (Paul & Son), a pink Hybrid Perpetual of great promise.

To Rose Lyonnaise (Bennett).

To Rose President Thiers (Bennett), a beautiful bright crimson Hybrid Perpetual.

To Rose Richard Wallace (Bennett), a fine crimson coloured Rose, with double well formed flowers.

To Rose Madame Jules Margottin (Bennett), a pretty pinkish yellow Tea-scented variety.

To Amaryllis Beauty of Reigate (Broom), an extremely fine crimson kind.

To Primula purpurea (G. F. Wilson), a very pretty kind with purple flowers.

To Broccoli Cooling's Matchless Winter (Cooling), an excellent large solid, pure white kind.

FLOWERS FOR THE POOR.

All those who have visited much among the London poor, whether in workhouses, hospitals, or in their own homes, have stories to tell of the softening influence of fresh flowers. We have heard of doors, which were resolutely closed against the district visitor, being first opened to receive a bunch of Primroses—after which the visitor was always welcome. Of late years much has been done by the window-gardening societies. Few London districts are now without one; and, from the day when the plants are brought by the exhibitors to be registered to the day fixed for the final show, a new life is imported into the family. The plant has to be cleaned, watered, trained, and sheltered alike from dust within and storms without. At last the great day comes; and with what honest pride the exhibitors carry their pots to the appointed spot, and with what intense anxiety do they await the decision of the judges as to the awarding of the prizes! Each class has its separate division in the tent or room where the show takes place. There is a workhouse class, a hospital class, a general class, and a children's class. The morning is generally occupied in arranging the classes. Early in the afternoon the doors are open to shilling visitors; later on the public are admitted at a penny; and this is the pleasure which many and many of the working classes have been looking forward to through the spring. Flags are flying on the green grass, a band is playing, and the rich and poor meet together—the one to admire what the other has cultivated under such manifold difficulties; children are seen dancing in one spot, playing at games in another; all ages are collected—

even the very old creep in, to have one bright day in the year. Then, as the shades of evening set in, preparations are made for the distribution of prizes, and the mass of visitors congregate round the platform raised for the speakers. What a proud moment for the individuals whose names are called out to come forward to receive the medal or money awarded! Sometimes the successful candidate has been so small a child that it had to be lifted up on the platform. The proceedings generally end by the singing of the Doxology, and then long trains of flower-bearers are seen wending their way home with their precious possessions. It was seeing the delight given by these days, and knowing from experience what a love the poor have for the beauties of nature, that led to the consideration how far this wholesome and innocent taste could be extended, and whether it would not be possible to procure a weekly supply of cut flowers from country friends to distribute amongst the various classes to whom they would be such a boon.

First on this list would come the incurable wards of our great workhouses, where are to be found men and women, many of whom have known better days, and who have had homes, and may be gardens, of their own, who are now ending their lives on a narrow bed, their only view the cold whitewashed walls around them, their only companions fellow-sufferers on adjoining beds, their only change the release of one of these sufferers from his or her earthly bondage and the arrival of another to take the vacant place. Weeks, months, and years—yes, even ten or fifteen years—are spent in this cheerless atmosphere. Of late years much has been done to alleviate the state of these dismal abodes by allowing a staff of Visitors to come in, but formerly no break ever occurred in the monotonous round of workhouse life. Besides workhouses there are general hospitals, asylums, and other institutions, whose inmates would be cheered and gladdened by the sight of anything green. Then there are the sick, the old, and the lonely in their own wretched homes in the back courts and alleys of our great metropolis. Great attempts are annually made to give school children and others country treats, and such days are in most cases the only sight they have of green fields and unsmoked trees. Surely if one day of country sights is such an enjoyment, will any one grudge the little time and trouble it would take to organise some plan by which flowers and verdure could be brought each week to those who are deprived of them? For two years the experiment was made by a lady in Belgravia. She was living in a house which lent itself admirably to the plan. From the main thoroughfare a narrow flagged passage led to a small enclosed garden, into which opened the front door of a verandahed cottage covered with creepers—one could not help thinking it might have been a shooting-lodge at the time when Belgravia was a snipe marsh, and that the improvers of modern days had overlooked its existence. Miss —— appealed to her country friends privately and through the daily papers, and many gladly responded.

An application for a share of the flowers thus sent was made by the chaplain of one of the large lunatic asylums in London—"To the sick in mind they will be a great boon;" and he conveyed the opinion of the medical officer as to the result of the donations:—"He places the highest value on the kind weekly gift of flowers to the patients of this hospital. The inquiries were endless as to when the flowers would come again. The pleasure of arranging them for the different wards and wings was great, and many a sad hour of depression has been cheered and lightened by the kind gift, and we shall be only too glad in due time to welcome the flowers again. The boon of them in one of the smokiest and dullest parts of London is untold."

Such was the result of the experiment on a very small scale; why should it not be extended? Every lady visitor to a workhouse or hospital has a circle, more or less extensive, of country friends. Could it not be arranged that four of them should each engage to send up a hamper one week in a month? What an enlivenment to a sick or incurable ward it would be to look forward to one day in the week when they would see what was bursting forth in the country, and so be able to follow the successive seasons by their flowers! What a pleasure to the convalescent to unpack these hampers and carry the contents to the bedsides of those who cannot move! For the poor in their own homes surely it would not be difficult to find in each locality some spare room (even the parish schoolroom on a Saturday afternoon, which is always a holiday), in which to receive and distribute such country contributions; a very little experience would prove what flowers lasted best and were therefore best worth sending. How many energetic young ladies there must be who spend the whole year in the country, and who probably envy their town friends their opportunities of doing good, but have never thought of the pleasure they could give by sharing their country luxuries with Londoners; and unless there were some system it would be useless to send up flowers for the chance of their being made use of; but we feel sure many would gladly assist in this work if they were put in the way—and the flower packing in the country would give almost as much pleasure as the unpacking in town. One of Miss ——'s contributors assured her that it had awakened a new sense amongst his school children, and that he was obliged to make it a favour as to who should be allowed to bring a nosegay for the London basket. It would also call forth both the taste and ingenuity of country people in arranging and packing flowers.

The objections that have been made are that the flowers would die before they reached their destination; but why should they die sooner than the weekly hampers that come up to decorate dinner tables and ball-room? Many of those sent to Miss —— were often preserved for a fortnight. "We change the water every morning, and put a bit of salt in, and that keeps 'em fresh." Another objection was that the carriage costs nearly as much as the flowers could be bought for at Covent Garden. We answer No. The carriage seldom exceeds one shilling and sixpence, and often is very much less, and for that sum a very small quantity of flowers could be bought; whereas a hamperful supplies between twenty and thirty persons, and few would scruple to pay a shilling per month when so much pleasure is given by it. Of course there must be some amount of time and trouble bestowed both by the senders and receivers—but what can be done without trouble? (and we do not call upon those whose time is better employed to assist)—and how many ladies there are in London who are too young or not strong enough to visit among the poor, who would be very glad to do something! Here is employment for them, harmless alike morally and physically, and yet giving a great amount of pleasure. What a pleasure a parish depôt of flowers well supplied each week would be! District Visitors would know where to send for nosegays for their sick, and it might benefit a higher class. How many an invalid in the middle and even upper ranks of life would rejoice in finding flowers within their reach,—single ladies, reduced in circumstances, who never can afford in the lonely hours of their latter days the luxury of what they had in profusion in their youth, when all was bright. To carry it out thoroughly it ought to be kept up during the spring and autumn,—not only in the summer months. Nothing answers better in London than Snowdrops, Daffodils, Primroses, and Violets. What baskets full of these might not be gathered by school children, and mixed with Ferns and evergreens! Then in the autumn, when the overworked higher classes are all going out for change and rest, what is the only change that our poorer brethren experience? Less work, less help, and fewer kind faces to visit them and cheer them onward on their toilsome road. We have gone out to visit our friends in their country houses, and wandered through their well-kept pleasure grounds and brilliant flower gardens—a couple of flowers per week from each of those well-filled beds would fill a hamper, and gladden the hearts of many of those poor souls to whom change and rest are unknown. The poor who were made so happy by the flowers last year are already beginning to ask, "When shall we have our posies again? They were a pleasure to us." And truly God's natural beauties preach sermons to the hearts of the poor. "I was walking in the park last Sunday," said an old woman, "and when I saw all the trees budding out, I could not but ask myself, Is there any good budding out in me?"

Will any one kindly assist in this "new missionary work" here in London? Any contributions of flowers, or any suggestions towards extending the plan, may be addressed to Miss Stanley, 22, York-street, Westminster, who will gladly receive them, and will undertake to carry out the plan in that locality.—Mary Stanley, *in Macmillan's Magazine.*

COVENT GARDEN MARKET.

April 4th.

New Grapes are coming into the market rather plentifully, and the old ones are yet in excellent condition. Strawberries are first-rate and in good demand. Green vegetables are becoming scarce, and are likely to be so until relieved by spring crops.

Prices of Fruits.—Apples, per half sieve, 3s. to 5s.; Chestnuts, per bushel, 12s. to 20s.; Cobs, per lb., 2s. to 2s. 6d.; Grapes, hothouse, per lb., 15s. to 35s.; Lemons, per 100, 6s. to 10s.; Oranges, per 100, 4s. to 10s.; Pears, kitchen, per doz., 1s. to 3s.; dessert, per doz., 6s. to 18s.; Pine-Apples, per lb., 6s. to 10s.; Strawberries, per oz., 1s. to 2s.; Walnuts, per bushel, 15s. to 30s.; ditto, per 100, 2s. to 2s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 5s. to 10s.; French, 15s. to 30s.; Beans, Kidney, per 100, 2s. to 3s.; Beet, Red, per doz., 1s. to 3s.; Broccoli, per bundle, 9d. to 1s. 6d.; Cabbage, per doz., 1s. to 1s. 6d.; Carrots, per bunch, 6d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 2s. 6d. to 4s.; Cucumbers, each, 6d. to 2s. 6d.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 2d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 3s. to 6s.; pickling, per quart, 6d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 5s. to 8s.; Potatoes, per bushel, 4s. to 8s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Savoys, per doz., 2s. to 3s.; Scorzonera, per bundle, 1s.; Seakale, per basket, 1s. to 2s.; Shallots, per lb., 3d.; Spinach, per bushel, 3s. 6d. to 5s.; Turnips, per bunch, 3d. to 6d.

THE GARDEN.

> "This is an art
> Which does mend nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

BUTTON-HOLE BOUQUETS AND COAT FLOWERS.

But few seem to understand that there is any difference between a button-hole bouquet and a coat flower; yet there is, and a very great difference too, the flower being, as the word signifies, a single bloom, whereas a bouquet means a number of flowers arranged according to taste. Many papers have appeared in different horticultural periodicals on the arrangement of cut flowers, and yet, with few exceptions, they have excluded button-hole bouquets, probably because, being small, people imagine that they must necessarily be easy to make. Just let them try, and I do not hesitate to say that they will find themselves much mistaken, as no combination of flowers requires to be put together with more taste, or to be more lightly done, than a properly made button-hole bouquet. Flowers selected for this purpose should always be good, particularly those for mounting singly, which should, in fact, be specimens of whatever kind is chosen. Ferns I always like to see in such bouquets, and also along with coat flowers, provided these are stove or greenhouse kinds; but hardy flowers I like best mounted with their own foliage alone. Nearly all flowers for bouquets of any sort should be wired; indeed, many could not be used for that purpose at all were they not mounted on wire, as, for example, the pips of white Hyacinths, which, in winter, are among the most useful flowers which we have. There are, however, other ways of mounting flowers besides wiring them. Let us take, for example, a Gardenia. The centre petals of this flower—indeed all except the outside row—are very even and lovely; but their beauty is somewhat marred by the outer ones, which look twisted. Now to remedy this evil, and to make them look all even, proceed as follows: Take a common Laurel leaf, and cut a piece out of it about an inch square; with a pair of scissors trim round the corners, so as to almost make it circular; then cut a cross in the middle, and down through that push the stem of the Gardenia until the flower and the Laurel leaf are pressed tightly together; then hold it upside down, and through the stem, close to the leaf, pass a "stub" wire (which will keep the leaf in its place); bend the ends down, and fasten them together with a little binding wire so as to form a stem. The petals of the flower can be then arranged out in their proper places, and the piece of Laurel leaf being so tight to the flower they will remain wherever they are placed. There is also another point to which I would wish to direct attention, and that is, the foundation of the button-hole bouquets, which is generally a piece of Maiden-hair Fern; but that is not stiff enough in itself to form a good support for the other flowers. To remedy this, the best plan is to back the Fern with a small Camellia leaf, wired, which will keep the whole bouquet firm and in shape. The following arrangement is that most often seen; at the back is a spray of Fern; next some long light flower, so as to form a kind of point or finish at the top; then a Camellia bud, or Rose, or some such flower, and then Maiden-hair Fern and whatever other small flowers are at hand. The bouquet of which the accompanying is an illustration is composed of a white Camellia bud, Lily of the Valley, blue Scillas, &c., and Maiden-hair Fern. I made one a short time ago of a half-open white Camellia bud, spray of Hoteia (Spiræa) japonica, and a few pips of white Hyacinth, mixed with a little Maiden-hair, and many remarked that it was very light and elegant looking. That which took the first prize at the Royal Horticultural Society's Show at Birmingham last summer was composed of a yellow Rose-bud mounted with blue Forget-me-Not, a pip of Kalosanthes coccinea, and one of Bouvardia. I have seen one made of Lily of the Valley, a blush-coloured Rose-bud, and the same shade of Hyacinth pips, with a little Fern worked through it, which was a very neat-looking little bouquet; another consisted of a spray of Lily of the Valley, a yellow Rose-bud, and a few pips of a rich purple Cineraria, which came out well against the deep colour of the Maréchal Niel bud. I could give descriptions of many others, but think that those which I have mentioned will suffice to show the best shape and style in which such bouquets should be made. A. H.

Button-hole Bouquet.

KEEPING GRAPES IN BOTTLES OF WATER.

Much that is unsupported by fact is being written in some gardening periodicals about the keeping of late Grapes in bottles of water. The advocates of the system, who know anything about it, only contend that there are great advantages in cutting off the bunches of late Grapes, say in February or March, on purpose to get the Vines pruned and properly dressed. I used at one time, year after year, to keep the bunches of Lady Downe's Seedling hanging on the Vines until the beginning of May, when the flow of sap began to burst the berries, and the bunches were hidden by the young shoots. Now, since I have put the bunches in bottles of water, I can keep the same variety in good condition until the middle of June, and have certainly given the Vines more strength and done them more justice by doing so. It is said by some, why keep late Grapes until that season, when early Grapes can be ripened in April or May? Gently, ye doubters; look at the present price of coals for early forcing, and the price per pound that would have to be charged for these early forced Grapes in the market in order to make their forcing profitable. I have heard from my friend Mr. Thomson that, in his great Vine-growing establishment on the banks of the Tweed, he will trust to his crops of late Grapes to bring the most "grist to his mill." Late Grapes carry better to the market than early forced ones, and they bring remunerating prices when the ruck of the Hamburghs and Muscats is over. By all means let Grapes hang on the Vines when ripe in the summer and autumn, and even up till February, should no bedding-plant exigencies stand in the way of their keeping; but after that date bottling the bunches will be found to answer best for the welfare of the Vines. In the latter end of February this year, I cut two houses of late Grapes, consisting of the following varieties:—Black Alicante, Barbarossa, Royal Vineyard, and Lady Downe's Seedling, and they will be consumed in the order in which they are placed. They were all bottled, and the bottles tied to the wires of one of the late houses, where the temperature could be properly regulated, and the roof shaded on sunny days. Late ripened Grapes had a very bad season to contend with in 1872, and they are not so well coloured as usual, nor so good in their keeping properties, but yet I expect to have them in fair condition up till the end of May. William Tillery.

M. Laliman, of Bordeaux, is about to submit to the Académie at Paris the results of his investigations into the origin of the Phylloxera, which, he is convinced, has not been, according to the received opinion, introduced by means of imported American Vines. In a communication to a Portuguese journal, M. Laliman states that, as a wine-grower, all his hopes for the future rest on Vines grafted on the American species—Vitis æstivalis, cordifolia, and vulpina, which, he has found, are never attacked by the Phylloxera.

NOTES OF THE WEEK.

—— Except in the Hyacinth farms of the Dutch we suppose there is no place where so many Hyacinths may now be seen in flower as in Hyde Park in the strip of garden parallel with Park Lane.

—— We are informed that the fine Bougainvillea, at Greenlands, Henley-on-Thames, is now in great beauty, and if it is in anything like the condition in which it was when we saw it a year or two ago, it is well worth a visit.

—— We are indebted to M. Pynaert for the discovery that Lilium auratum, besides being a beautiful plant, is a grand specific against house-flies, and that a single specimen of it in an apartment will keep it clear of these troublesome insects.

—— We have had an opportunity of inspecting specimens of Cooling's Matchless Winter Broccoli, and feel satisfied that it is a valuable addition to vegetables in use at this season of the year. The heads, which are beautiful in form, are large, solid, remarkably white, and well protected by means of the leaves, which grow over the "flower," as in the case of Knight's Protecting Broccoli. When cooked the flavour is excellent; indeed, we have no hesitation in stating that, taking all its good qualities into account, it is one of the finest Broccolies in cultivation.

—— The Royal Winter Garden and ranges of greenhouses, figured in The Garden, p. 403, vol. i, and erected at West Coates by Messrs. Downie, Laird, & Laing, were formally opened to the public last Saturday by the Lord Provost of Edinburgh, in presence of an immense concourse of spectators. A grand exhibition of spring-flowering plants was held in connection with the opening.

—— The prospects of the Bath meeting of the Royal Horticultural Society become now more encouraging every week. We find that the prizes to be awarded, instead of being £1,800, as first announced, will be £1,900, being £300 in excess of the amount distributed at Birmingham. The schedule of prizes is now ready for delivery by the secretary, and Mr. Eyles has likewise prepared a plan for the arrangement of the ground, and the position of the various tents.

—— With reference to the appearance of the fruit crops, Mr. Gilbert, of Burghley, writes to us that both indoors and outside there is a want of vigour in the bloom-buds, more particularly in those of Peaches, Nectarines, and Apricots, all of which fail to show that boldness which is essentially necessary for a crop of good fruit, even in the orchard house. A good many of the Peach walls at Burghley are furnished with 3-feet wide glass copings; still, even under such circumstances, there is a want of robustness. Pears on west walls are, however, all that can be wished, as regards show of bloom; but Plums, particularly Green Gages, are deficient in that respect. The Cherry Plum for these five seasons past has been studded with bloom, but this year it is without blossom. Apples, however, look more promising, and so do Cherries and Figs; and the season being now far advanced, let us hope that no nipping frosts may blight our expectations.

—— At a special general meeting of the Royal Horticultural Society, held at South Kensington last Friday, the old Council, in accordance with the new bye-laws, tendered their resignations, which, with the exception of those of H.R.H. Prince Arthur, the Duke of Teck, the Duke of Buccleuch, and Lord Londesborough, were accepted. A new council was then elected, consisting of Viscount Bury, M.P., Hon. R. Chetwynd, Mr. Hardcastle, M.P., Sir Coutts Lindsay, Mr. W. A. Lindsay, Sir A. Slade, Dr. Kellock, Mr. A. Smee, Mr. H. Little, and Mr. A. Murray. Sir Coutts Lindsay moved, and Viscount Bury seconded, the re-election of the Duke of Buccleuch as president. This was carried, as was also a resolution to the effect that, should his grace refuse to accept the post, Her Majesty should be asked graciously to nominate a president. Mr. W. A. Lindsay was elected secretary in the room of Major-General Scott.

—— In reference to the Veitch Memorial Prizes, we are enabled to state that, with the consent of the Council of the Royal Horticultural Society, the Trustees will distribute the following prizes at the forthcoming show of the Society at Bath, in June next: A. For the most meritorious dish of Black Grapes, exhibited as above. The Veitch Memorial Medal, and a prize of £5.—B. For the most meritorious dish of White Grapes (Muscats), exhibited as above. The Veitch Memorial Medal, and a prize of £5.—C. For the most meritorious dish of White Grapes (not Muscats), exhibited as above. The Veitch Memorial Medal, and a prize of £5.—D. For the most meritorious specimen Orchid in flower, exhibited as above. The Veitch Memorial Medal, and a prize of £5.—E. For the most meritorious specimen Stove Plant, in flower, exhibited as above. The Veitch Memorial Medal, and a prize of £5.—F. For the most meritorious specimen Greenhouse Plant, in flower, exhibited as above. The Veitch Memorial Medal, and a prize of £5. The subjects for the foregoing prizes are to be selected from amongst the objects exhibited at the above-named show, in accordance with the Royal Horticultural Society's Prize Schedule, by *bonâ fide* gardeners of Great Britain or Ireland. A notification of entry on the part of those who desire to compete is to be sent, not later than June 14, to the Trustees, under cover to Mr. Moore, Botanic Garden, Chelsea, and it must be stated in which of the classes in the Society's and the Local Special Schedule of Prizes the exhibits will be found. The awards will be made for high-class cultivation, and the decisions of the judges will be final.

—— The ride which has for some time past been in course of construction round Battersea Park is now completed, with the exception of about half a mile in length, the works from the York-road entrance on the south side westward having been finished within the last few weeks, and there will shortly be a continuous equestrian ride entirely round the park nearly two miles in length.

—— Towards the end of last month, Señor J. A. Henriques, director of the Botanic Gardens at Coimbra, visited Oporto for the purpose of making arrangements with one of the principal iron-founders of that city for the erection of a large stove in the gardens of the University. The new structure will be devoted to the growth of Ferns and other plants which require a moist warm atmosphere. It will stand close to the great Palm-houses, and will cover a space of nearly 1,900 square feet.

—— At a dinner recently given at Delmonico's, New York, the dining-room was filled on each side with banks of Moss brought on purpose from the south, in which masses of flowers of the choicest kinds were placed, including several hundred yellow Roses which cost one dollar each. Down the centre was a tank full of water, over which was an aviary of song birds, and in the midst two swans, real ones, swam about, the whole adorned with superb flowers, water Lilies, and Ferns. During the evening four ladies fainted from the overpowering effects of the flowers.

—— As a pleasing testimony to the progress of horticulture in distant parts of the world, we read in the current number of the Portuguese *Jornal de Horticultura Pratica* that a horticultural exhibition was held last year at Lima, in Peru, at which M. Jean Verschaffelt, of Ghent, obtained a gold medal and a prize of £100 for his collections of various plants, Conifers, Zamias, &c.; Messrs. E. H. Krelage and Son, of Haarlem, a silver medal for Hyacinths; and M. Robert Newmann, of Erfurt, a silver medal for his collection of seeds. Although these prizes have been carried off by European, and not by native, competitors, the mere fact that an exhibition of this kind has been inaugurated in Peru is a most gratifying proof of advancement, and of a desire for further improvement on the part of the inhabitants.

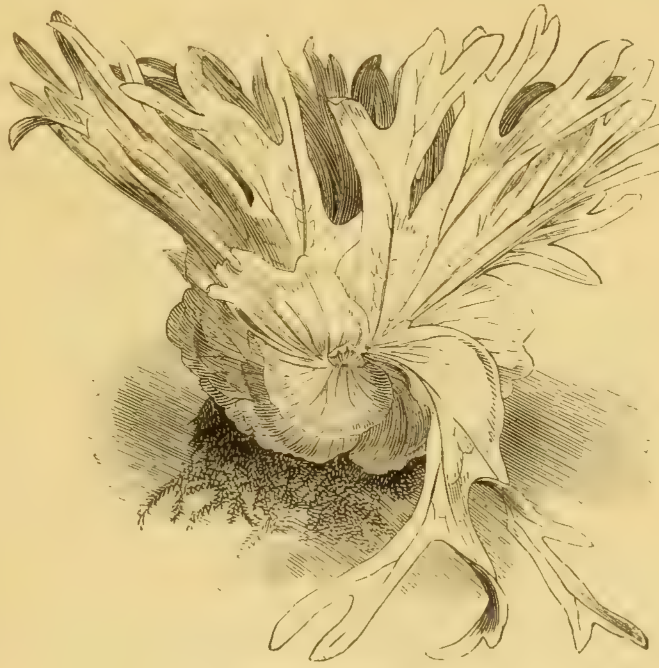
—— The prize list of the great International Horticultural Exhibition to be held in Manchester next September, a copy of which we have just received, seems to have been framed in a most liberal spirit. There are no fewer than seventy classes for fruit alone, twenty-seven for vegetables, twenty-three for cut flowers, seven for bouquets and table decorations, nineteen for plants, nine for implements and designs, and six for miscellaneous subjects. For the best collection of twenty kinds of fruits, including not more than two kinds of Grapes, two of Pine Apples, and two of Melons, a first prize of £30 is offered, a second one of £20, and a third of £12. For the best collection of fifteen kinds of fruit there is a first prize of £20, and another of £12 for the best group of ten kinds, exclusive of Pines. The following first prizes are also offered, viz., for twelve kinds of hardy fruits, £8; ten varieties of Grapes, £15; five varieties of Grapes, £7; three bunches of Black Hamburgh, £5, and the same sum for similar exhibitions of Muscat of Alexandria, any other white Grape, and any other black Grape. For an ornamental basket of Grapes, consisting of not less than eight varieties, £10 are offered for the heaviest bunch of black and the same of white Grapes £3, and for the best seedling Grape not in commerce, £5. Prizes, on the same liberal scale, are likewise offered for Pines, Peaches, Nectarines, Apricots, Melons, Figs, Pears, Apples, &c. For fruiterers' collections several classes are open, the first prize in one, for a miscellaneous group, being £20. To France and Italy, Germany, the United States, British North America, and Turkey and Egypt, several classes are also assigned for fruits grown in these countries. The first prizes in the vegetable classes range from 10s. to £12, those in the section for cut flowers from 10s. to £7, and for bouquets, &c., from £1 10s. to £4. For six blooming and six fine foliaged plants a first prize of £20 is offered, and others vary from £3 to £10. For the implements, &c., medals only are offered. Altogether the prize list amounts to considerably over £1,000, in which are included several gold medals, valued at £7 7s. each; besides these, too, there are eleven medals to which no value has been assigned. Surely an undertaking on such a liberal scale cannot fail to meet with a hearty response.

THE INDOOR GARDEN.

STAG'S-HORN FERNS.

(Platyceriums.)

In a natural state these are epiphytal, therefore they succeed best and display their beauty to the greatest advantage when treated in that way. To do this properly, the blocks on which they are placed should be of large diameter, so as to prevent the fronds or shields, as they are sometimes called, clasping too tightly, and thus concealing a great portion of the beauty of the plant. They should also be of sound material, in order that they may last as long as possible; the dead stem of the Tree Fern I have found suits them admirably—Dicksonia antarctica being perhaps the best, because the stems of that species are much stouter than those of any other kind. I have also grown Stag's-horn Ferns in pots made especially for the purpose, *i.e.*, with half the side cut away, where it is compulsory to grow them in pots; this is undoubtedly a good contrivance, but I much prefer them on blocks of wood, so that they may be hung up in any portion of the fernery according to convenience or taste. Platyceriums are not by any means difficult to cultivate. When fastened upon the blocks with copper wire, some fresh sphagnum and fibrous peat should be packed down behind the barren fronds, and the plant and block immersed in water until the soil is thoroughly saturated; after this the only care necessary is to maintain a moist atmosphere, and to give sufficient water to keep the soil in a nice moist condition. The following kinds are in cultivation, and each of them having a character peculiarly its own, all of them may be grown in the same collection without producing a monotonous effect.



Platycerium grande.

P. ALCICORNE (the Elk's Horn Fern).—This species, on account of its small barren fronds, and the rapid manner in which it throws out young plants from its roots, forms a fine object when planted in a basket. There is, however, a larger variety of it, in which the barren fronds stand more erect and are larger in size than those of the species itself, and which consequently shows to greater advantage on a block than in a basket. In the normal state, the sterile fronds are somewhat reniform, sessile, and persistent; the fertile ones stipitate, coriaceous, dichotomously forked, clothed with white stellate scales, and from 12 to 24 inches long; the sori are disposed in amorphous patches on the lobes at the extremities of the fronds. It thrives well either in stove or greenhouse, but grows more luxuriantly in the former than in the latter. It has a wide geographical range, being found in Java, the Malay Archipelago, Madagascar, and in various parts of Australia.

P. GRANDE.—This fine species, as already remarked, should be grown upon a large block, upon which it forms a beautiful coronet. The sterile fronds or shields are erect and permanent, alternately overlapping each other, rounded on the lower edge, the upper part much divided or forked. The fertile fronds rise from the sinus of the sterile ones, are coriaceous in texture, many times dichotomously forked, and densely clothed with white stellate scales. They measure from 1 to 3 feet in length, and the sori form a dense, irregular patch near the sinus of the first division. It requires a stove temperature. It is a native of the Malay Islands and of various parts of Australia.

P. STEMMARIA.—This is a fine stove species from Western Africa. Its barren or sterile fronds are sessile, large, sub-ascending, and measure from 1 to 2 feet in height. Although permanent, these differ from those belonging to other species, inasmuch as they die annually, and change from glaucous green to chestnut brown. They are, however, hidden by the young shields, which are produced every spring. The fertile fronds are 2 to 3 times forked, thick and leathery in texture, the upper side dark green, but densely clothed on the lower side with white stellate scales; the sori are dark brown, situated on the under side of each lobe. Of this species the late Dr. Welwitsch discovered a singular form, with large spathulate fronds, in a locality far distant from that in which P. Stemmaria is found.

P. BIFORME.—This is a rare plant; indeed, I am not sure that the true species is really in cultivation. The plant which we have in our collections under this name has much the appearance of a narrow-leaved form of Stemmaria; but, as no large specimens have come under my notice, I cannot speak positively on this point. The specimens which I have from Moulmein of the true plant show it to produce very long and pendulous narrow fertile fronds, which must have a splendid effect when seen growing in a suitable position; whilst the irregular-shaped masses of sori occupy a scutiform lobe separately. It requires stove heat, and exactly the same treatment as P. grande. It is a native of Burmah and various islands in the Indian Archipelago.

P. WALLICHII.—I have seen young plants under this name in a few collections, but they were far too small to enable me to decide whether or not they were anything but plants of P. grande. The true plant would appear to be of majestic appearance, the sterile fronds being much broader and longer than those of P. grande, which they otherwise much resemble, and also in being more forked; the fertile fronds are also larger and more deeply divided, and densely clothed with white stellate scales. It will form a grand addition to the cultivated species of this small but extremely beautiful group of Ferns. It is a native of Borneo. G.

CHRYSANTHEMUMS FOR THE CONSERVATORY.

BY ADAM FORSYTH, STOKE NEWINGTON.

In the gloomy months of November and December, when the Chrysanthemum is in its prime, gaslight entertainments begin to assume increased importance, and many of these might be considerably enriched by the aid of these noble flowers. The Poinsettia and the Solanum are charming things for gaslight decoration, but the Chrysanthemum affords endless variety at an exceedingly cheap rate; and in a private entrance-hall, a concert-room, a bazaar, or the covered approaches to any place of public resort, a bank of Chrysanthemums affords a brilliant welcome and a grand accompaniment to any kind of festivity, because every known variety appears to advantage under gaslight. The employment of Chrysanthemums in decoration of the greenhouse and conservatory is most important, and I have endeavoured to exemplify the value of the plant for this purpose at my nurseries at Shacklewell and Stoke Newington, during many years past, and in that time I have seen many a garden made gloriously gay by the adoption of the plant for a conservatory feature. It should be remembered that it is not necessary to bestow so much care on specimens for home use as for a public exhibition. Provided they are leafy, healthy, flowery, bright, and buxom, the requirements of the case are satisfied. They need not be trained at all; they may all be grown according to their natural characters, as bushes, and if the assortment consists of Pompones and large-flowering varieties in about equal proportions, they may be grouped so as to form a dense rich wall of flowers, well backed up by a groundwork of dark leafage. In preparing a display of autumnal flowers for the conservatory, it is well not to attempt too much, and it should consist chiefly of untrained plants. There is no particular necessity to begin business until March; by so doing, the cultivator is spared the trouble of nursing cuttings through the days of winter. Having the stools stowed away in a pit or under a wall, the cultivator will, early in March, take as many cuttings as he requires, and soon make nice plants of them. If he has no stock to begin with, he will, of course, have to beg or buy. In begging, it is well to make sure that you obtain cuttings worth having, with their proper names attached; for it is not at all unusual to find that a season has been wasted in growing sorts that have long since been discarded by good judges as unworthy of a place in any selection, unless it be a selection of sorts to be extinguished. It will be well to stop all the plants early in April, and a fortnight or so afterwards to shift them into forty-eight sized pots. About the middle of May they should all be put out and plunged. Very many amateurs who do the Chrysanthemum well do not plunge the pots. To them I say, long experience and observation—having the interest of my business to make me watchful—have convinced me that those who do well without plunging may do better with it, and they will escape many risks which plants in unplunged pots are always exposed to. As to any further stopping, a little judgment must be exercised. Look over the plants in the first week of June, and then and there settle that part of the business. If you are not familiar with the sorts, take a trade catalogue and look them through. When you find by the label on your plant that you have to decide as to one of the finest incurved varieties, do not stop the plant. In any case, if you find the variety is *not* recommended for specimen culture, refrain from stopping. On the other hand, those which *are* recommended for specimens may be stopped in the first week of June, as being free to flower. You will be safe, and will obtain more flowers than if you refrain from stopping. To sum up the case in a few broad rules. First-class incurved and late-flowering varieties should only be stopped once, and better if not stopped at all. Reflexed, free-flowering, and early-flowering kinds in all classes may be stopped twice, and the smaller sorts, such as Intermediates and Pompones, may be stopped three times, and the last pinching should be done in the early part of June or by the middle of June at latest.

One good reason for looking over the plants in the first week of June, and then making an end of the pinching business, is that about the middle of June the plants should be shifted into eight-inch pots, to give them a good chance in the height of the growing season. Keep them freely watered at the root, and overhead in dry weather, and even in rainy weather see that they are moist enough at the root, for it often happens that, while the leaves are well washed by rain, the roots get none of it. By the middle of July it will be necessary to settle another point—which are to be shifted and which are not. Here, again, the sorts may be classified very nearly as above; but the first thing to consider is the size and general appearance of the plants. The first-class show kinds will be the better for a shift into eleven-inch pots, where large specimens are required, but the reflexed and smaller kinds may be allowed to flower in eight-inch pots, and may be helped to the end of their journey by liquid manure as soon as they have quite filled their pots with roots. In any case, however, robust plants that have quite filled their pots with roots, and that appear, by their ample leafage and stout stems, to be capable of growing considerably larger yet, should be shifted to give them a chance of making a grand show when their day of triumph arrives. The question will arise in the ambitious mind—why stop at eleven-inch pots? why not go on far beyond that? The proper reply, perhaps, would be, that experience has proved that to overpot these plants is to waste labour, and render them unwieldy without the slightest gain, but probably a loss both in quantity and quality of flower. The growing season extends from about the 1st of March to the 1st of August—say, to put it roughly, six months. In that time the plant will attain to a certain size, according to its advantages, and it is the business of the cultivator to provide all the advantages the plant can make use of. But when the growing season ends, the wood begins to ripen, and the flower-buds to swell, and the increase of root-room then is more harm than good. In case of any large vase or basket or tub requiring to be filled with Chrysanthemums, the best way would be to plant it with a lot of healthy plants out of forty-eight sized pots about the middle of May, taking care not to overcrowd them, and to keep them nicely tied out, to prevent destruction of the lower leaves by overlapping.

In preparing a conservatory display, the greatest care should be taken to keep the plants green to the bottom. In growing for cut flowers this is of less importance, although it is not unimportant. In selecting for conservatory decoration, free-flowering kinds of the most distinct and striking colours are always to be preferred. Many of the most perfect exhibition incurved flowers are not showy, and, although a connoisseur will prefer them to all others, many of the high coloured reflexed flowers will be preferred by those who are less critical. Plenty of flowers and plenty of colour are the principal desiderata in selecting for conservatory decoration, and happily there are a few of the very finest exhibition kinds, such, for example, as Jardin des Plantes, Mrs. G. Rundle, Dr. Sharp, and the Prince of Wales, which give us an abundance of flowers, of the most attractive character. It is not important to select early-blooming kinds, because they will have the aid of glass after the first or second week in October, and be safe from the destruction of their opening buds by frost.—*Floral World.*

Acrid Properties of Dieffenbachias.—All the species of Dieffenbachia in cultivation are natives of tropical South America and the West Indian Islands, where they grow in moist shady woods, and frequently form stems from 8 to 10 feet in length, and sometimes even more. These snake-like stems becoming too weak for self-support assume a recumbent position, and if bent into the earth root at every joint. The juices of Dieffenbachias are so excessively acrid that if a piece of the root or stem be taken into the mouth and slightly compressed, it affects the person who tastes it in a serious manner, the tongue becoming so swollen as to be scarcely containable in the mouth. D. Seguina possesses this dangerous property to such an extent that it is known in its native country by the name of Dumb Cane. Other species of this genus too inherit similar properties; for a young gardener with whom I was acquainted being induced to taste a piece of the stem of D. Baraquiniana was badly affected by it; others I know are also extremely acrid, as I can testify from my own experience, having several times just touched with the tip of my tongue newly cut pieces of stem, and found them most disagreeable, in short, ten times more unpalatable than Gentian root.—W. Forbes.

Balsams.—When well grown these are, perhaps, the showiest of all our tender annuals, and are those best adapted for conservatory decoration from July to September. They like all the light our climate affords, and a rich, open compost to grow in; the great demand made on the roots during the period of active growth informs us, too, that liquid manure is a useful auxiliary to keep up vigour, and may be applied freely when the pots become full of roots; bottom heat must also be given while they are growing, and they like plenty of air during every stage of growth. The soil preferred is half-decayed turf, calcined clayey loam, horse droppings, half rotten, and rubbed through a half-inch sieve, and bone-dust. The clayey loam I calcine sufficiently, and it acts as a drainage to the soil; in the absence of this, soft bricks broken to the size of Filberts may be used. The turfy loam may comprise rather over one-half the mixture, the dung and drainage material the other. A handful or two of bone-dust may be used or not, as it may be at hand. The seed should be sown in pans in a hotbed, and the young plants potted singly as soon as they are an inch above-ground, otherwise they become unshapely and drawn. Each time the plants are shifted, lower the ball a little in the pots, so that the stems may be short, and that roots may be produced from the parts buried. If possible, keep them plunged in bottom heat, but near the glass, in a frame, the shades of which are tilted up a little night and day. Should they form flower-buds sooner than wanted, rub them off, and they will speedily be succeeded by another supply.—F. S.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

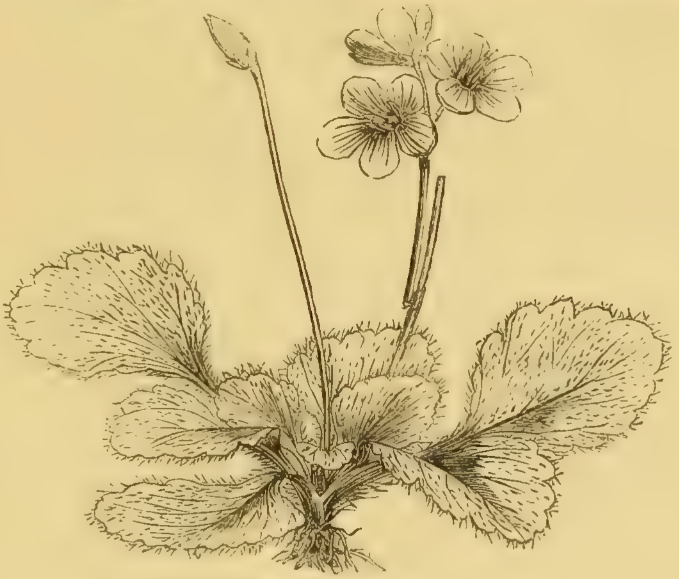
New Holland Pitcher-Plant (Cephalotus follicularis).—I have failed with this plant, and should be glad of a few words of advice as to its culture. B. [Grow it on a shelf near the glass in a mixture of sphagnum and peat and keep it moist throughout the growing season.]

Hoteia (Spiræa) japonica.—This, although quite hardy, is an excellent plant for forcing. Its lively green foliage and charming white flowers make it extremely useful in all kinds of ways, and the demand for it for bouquet work, as well as for furnishing purposes, is very great. It is easily grown, and no establishment should be without it.—F.

THE FLOWER GARDEN.

RAMONDIA PYRENAICA.

This interesting Pyrenean plant is found on steep, somewhat shady rocks, and, according to Ramond, exclusively in valleys leading from north to south; its leaves are in rosettes spreading very close to the ground, blistered, deeply wrinkled, and densely covered with short hairs, which are quite shaggy beneath and on the leaf-stalk. The flowers, which are purple-violet, with orange-yellow centre, and from an inch to an inch and a half across, are borne on stems from 2 to 6 inches long. It does very well on rockwork in mossy fissures filled with well-drained peaty earth, and is easily grown in cold frames in well-drained pots, well watered during the warm months. It is increased by means of seed with the greatest facility, and is well worthy of general culture. It is usually seen in gardens with only two or three sprays of flower; but in a window of the dining-room at Benthall Hall, we had the pleasure of seeing a specimen of it last year nearly a foot in diameter, and with quite a little cloud of large soft mauve flowers. The plant had been grown in a cool frame all through the winter and spring; it, however, does well in the open border. The largest pot specimens at Benthall were formed by putting a number of young suckers in a pot.



Ramondia pyrenaica.

HERBACEOUS PHLOXES.

There are two distinct types of herbaceous Phloxes in cultivation, viz., the P. suffruticosa or shrubby section, and the P. decussata section, which embraces garden hybrids having a more robust growth, and being rather later in coming into flower than the others. The varieties of the former section (suffruticosa) are largely cultivated in Scotland and in the moister districts of the midland counties and north of England; but in the neighbourhood of London and in the home and southern counties they are scarcely grown at all, as they do not do well. A cool moist climate suits the suffruticosa section best; but the varieties of P. decussata appear adapted for general cultivation, and are seen everywhere. The varieties of both sections are readily propagated by division of the roots in spring, and also by means of cuttings taken from the young growth which appears round the base of the flowering stem during the summer. The cuttings root quickly when placed in light sandy soil in a frame or cool house, and covered with a hand-glass. As soon as rooted, the plants should be placed singly in large thumb or small 60 pots, and be wintered in a cold frame, where they can be kept close during severe weather. In spring they can be transferred to a bed formed of deep, rich, strong loam and leaf soil, as the panicles, or the trusses of flowers, as they are sometimes termed, come much more finely developed than when grown in a light, free, and dry soil. In the southern districts of England, and in fact in the majority of places in northern localities, the Phlox can be wintered in the open ground with little fear of injury; but it is always better to protect the crowns of the choicer varieties in some way, either with a covering of ashes or some loose litter shaken over them. A bed of Phloxes planted on a piece of well-prepared ground is an object of great beauty in a garden, and also of value for furnishing cut flowers. The cultivation of the Phlox in pots is by no means difficult; but to do it successfully requires some knowledge of the varieties that succeed best in this way. The cultivator who first essays this mode of treatment should select the strongest of the newly-struck cuttings, and shift them into 48-pots, and subsequently into 32-pots if required. At the end of April these should be placed in the blooming pots, which ought to be from 8 inches to 10 inches in diameter; and after potting is done the pots should be plunged in ashes, tan, or any other suitable material, in a shady position, and on no account be allowed to suffer for want of water. A check at this stage would result in grave consequences to the plants. When the plants come into bloom they may be removed to the conservatory, and be kept well watered. As soon as the plants have ripened their growth after blooming, they should be cut down, and the pots plunged in ashes in the open ground; and, when severe weather comes, some litter should be shaken over the crowns to keep them from being harmed by frost. Here they can remain till spring, and when they begin to start into growth the plants should be turned out of the blooming pots, the roots trimmed, and then placed in smaller pots; and, as soon as these become filled with roots, be again placed in the pots in which they are to flower, and be treated as before directed. New varieties of perennial Phloxes are obtained from seeds; but so much difficulty has been experienced in getting the seed to germinate, that many are deterred from attempting to raise seedlings for themselves. Frequent failures have resulted from attempting to raise them in heat.

R. D.

NEW, RARE, OR NEGLECTED ALPINE PLANTS.

BY J. C. NIVEN, BOTANIC GARDENS, HULL.

(*Continued from p.* 257.)

Sempervivum arenarium, when grown in dense patches, has a lovely effect. It is much smaller than S. globiferum, to which it is allied, and is usually of a richly crimson colour; the leaves in the rosettes are not incurved, as in the latter species; the flowers are small, but crimson, and exceedingly pretty.

S. anomalum.—A native of Dauphiny, in the South of France; the rosettes are small, and covered with glandular hairs; as regards blossom, it is one of the prettiest species, is perfectly hardy, and of as free growth as our own common Houseleek.

S. Heuffelli is remarkable for the rich tints its foliage assumes in the autumn—almost a chocolate crimson. It is very distinct in the form of its flowers from all other species, its flowers being more tubular, and not expanded; they are of a yellow colour, and, as regards the value of the plant in point of beauty, may be readily dispensed with.

S. hirtum, piliferum, and fimbriatum are all remarkable for possessing little dense tassels of hair at the extremity of each leaf; they are closely allied to one another, though bearing distinctive characters, not, perhaps, noticeable to the casual observer.

S. Pittoni.—A somewhat tender-looking plant, but, nevertheless, perfectly hardy; it is a very distinct species, the leaves being covered with fleshy hairs that give the whole plant the appearance of being frosted over.

S. Reginæ Amaliæ.—A fine vigorous grower, from Greece; scarce yet in cultivation, and likely to remain so for some time, on account of its slightly arborescent character.

Silene quadrifida and quadridentata are species that deserve more than mere nominal mention; in fact, among the dwarf rock plants they have scarcely any equals. Quadrifida has narrow leaves, grows about 4 inches high, producing two or three flowers on each stem, of pure white, and beautifully notched. S. quadridentata grows about 2 inches high, and for at least a month is covered with its small but exquisitely symmetrical white blossoms. They are both perfectly hardy when given a suitable locality on a rockwork, and will be found well worthy of that distinction.

Statice minuta, bellidifolia, nana, and speciosa are all species well worthy of cultivation, compact in habit, the flowers produced freely and of long continuance, added to which they are on a dry subsoil perfectly hardy. There are no flowers better adapted, in lightness and elegance, for giving a sort of neutral tint finish to a bouquet of flowers.

Teucrium pyrenaicum.—A dwarf alpine plant with roundish leaves, somewhat woolly, and producing an abundance of sober-coloured flowers. It is well worthy of a place in all collections.

Thalictrum tuberosum.—Grows about 9 inches high. Besides the usually graceful foliage which we find in all the dwarf forms of the genus Thalictrum, we have in this instance an additional beauty in the abundant mass of yellowish cream-coloured flowers which this plant produces. It is perfectly hardy, and thrives in a deep peat soil.

Thymus Serpyllum album, the white variety of our common wild Thyme is a lovely plant for a sunny bank. Nothing can be more charming than such a bank covered with a mixture of the common wild form and the white variety. Singularly enough, I have never met with the white variety wild. The first plant that I cultivated came from the Carpathian Mountains, and, if I mistake not, the said plant is the parent of all now in cultivation.

Trollius.—This genus, although more generally grown as a border plant, is a true alpine. Who, in rambling in the fields that border, as it were, the altitudinal zone of cultivation, has not been struck with the great contrast produced between the golden colour of the Buttercups, or still more golden of the Marsh Marigold (Caltha palustris) and the delicate lemon tint of our own Trollius europæus? And how many beautiful congeners has this Trollius europæus, ranging from T. pumilus pallidus (sometimes called albus), to the noble border plant T. napellifolius, with its large orange blossoms, almost the size of oranges; the former some 9 inches high, with cream-coloured flowers, the latter when growing vigorously full 30 in. high. Especially noticeable in this group are T. sinensis, in which the modified linear petals are exserted, and form a sort of rigid crown of intense gold, rising from amid the expanded petals; and T. americanus, rarely to be met with true, but when obtained to be cherished. Its petals almost approach the scarlet tint along their outer margin.

Veronica satureifolia is one of the very finest species; the flowers are about the size of V. saxatilis, of the same intense blue, and produced in abundant upright racemes. A somewhat rare plant, but, when once seen growing in perfection, never to be forgotten. Add Veronica lactea syn. repens, verbenacea, pectinata, rupestris, bellidifolia, Daubeneyi, all species well worth cultivation, of good dwarf habit, and admirably adapted for rockery. Nor should the pink variety of V. officinalis be omitted—forming, as it does when established, dense patches of pink-coloured blossoms, some elevated 3 inches above the surface of the ground.

(*To be continued.*)

Destruction of Crocus Roots.—I send you some roots from a long, broad border, in which there has been a broad band of common yellow Crocuses for upwards of twenty years. During the last two or three years they have failed at one end, at first only two or three yards; last year about six, and this year the disease seems to have spread about two yards further still. Both last year and the year before the vacancy was filled up by strong bulbs from Holland, which came up well, but went off as you will see by the bulbs sent. They are all covered with a small white insect, rather like a miniature woodlouse. I shall, therefore, be very grateful if you can tell me the name, cause, and cure for this insect, as it sadly spoils the effect of the border, which is about eighty yards long. Blue Salvias have also gone off mysteriously in the same border.—F. M. [The insect or grub was crushed in transit, but we believe it to be one of the Myriapoda named Polydesmus complanatus. We do not think, however, that it is the author of the mischief, which we attribute to mice, the marks of their rodent teeth appearing on one of the bulbs.]

Bignonia capreolata.—This Bignonia, described at p. 261, is perfectly hardy with me.—H. N. Ellacombe, *Bitton Vicarage, Gloucestershire.*

Primula nivalis.—This, which is sometimes called helvetica alba, is one of the most beautiful of pure white spring flowers. Its leaves are very much serrated, and the truss of bloom is close to the foliage, each plant forming a bouquet in itself. It is now everywhere in fine bloom.—R. H. B.

THE ARBORETUM.

THE MOVEMENT OF THE SAP.

The correspondence which you have hitherto published on this subject tends to show that sap does not descend; but let us take, for example, a Pelargonium cutting. How does it happen that, immediately it is placed in conditions favourable to growth, it emits roots? Does not this prove that the old notion—viz., that the sap ascends, is changed in the leaves, and comes down in the shape of organisable matter—is true? Roots themselves, even, only increase when acted on by this descending sap. It has been said that every particle of descending sap is assimilated by different organs previously formed, and that nothing remains in the stem but wood at the fall of the leaf. In opposition to this statement let me cite a case or two. If a tree planted in the open air have one of its branches conveyed to the inside of a house in which there is a high temperature, even in the dead of winter, when the stem and other parts outside are dormant, the branch thus introduced to heat will immediately start into growth. Therefore, if no particle of sap remains, but if, on the contrary, all is assimilated or converted into wood in autumn, how does it happen that the sap begins to flow, and that leaf-buds and flower-buds begin to open? Is the woody portion soluble, and capable of being again reduced to sap, or cambium, by means of heat? No. As much organisable matter remains in plants during their period of rest as serves to start them again in spring. Why, if nothing remained in such cuttings as those of Gooseberries and Currants but wood, we might as well put walking-sticks in the ground in spring and expect them to strike root. We all know that in winter there is a strong tendency to sleep, both in the animal and vegetable kingdoms. The little dormouse goes to sleep at the approach of winter, and remains in a torpid condition until warm weather comes; and then, affected by its influence, awakes from its insensibility and partakes of some food. But, should that warm period be followed by cold, it will again go to sleep until the advent of summer weather finally rouses it into activity. Now, if there had not been blood in the veins of this little sleeper, ready to be set in motion under the influence of warmth, it would have slept on; and, as far as my opinion leads me to believe, plants destitute of sap or cambium will never start into growth. I, therefore, conclude that there is a descent of the sap, and that it is on that account that cuttings root and that wood is formed. How do your correspondents account for the fact that, in all cases in which a limb is removed from a tree, the wood-forming matter of the cicatrix comes from above, and never from below?

Kew. J. Brennan.

ENCOURAGEMENT TO PLANTERS.

We learn from one of the editors of the *New York Tribune* that a bill more important to settlers on the public lands of the United States than any that has before passed since the Homestead Act became law during the last hours of the session of Congress just closed. It is an Act to encourage the growth of timber on western prairies, and is the first measure of the kind that has ever been adopted by Congress. The following is its full text:—

Be it enacted, That any person who shall plant, protect, and keep in a healthy growing condition for five years, 40 acres of timber, the trees thereon not being more than 8 feet apart each way, on any quarter-section of any of the public lands of the United States, shall be entitled to a patent for the whole of said quarter-section at the expiration of said five years, on making proof of such fact by not less than two credible witnesses; provided, that only one quarter in any section shall be thus granted.

Sec. 2. That the person applying for the benefit of this act shall, upon application to the Register of the Land Office in which he or she is about to make such entry, make affidavit before said register or receiver that said entry is made for the cultivation of timber, and upon filing said affidavit with said register or receiver, and on payment of ten dollars, he or she shall thereupon be permitted to enter the quantity of land specified: Provided, however, That no certificate shall be given or patent issue therefore until the expiration of at least five years from the date of such entry; and if at the expiration of such time, or at any time within three years thereafter, the person making such entry, or if he or she be dead, his or her heirs or legal representatives, shall prove by two credible witnesses, that he, she, or they have planted, and for not less than five years have cultivated and protected such quantity and character of timber as aforesaid, they shall receive the patent for such quarter-section of land.

Sec. 3. That if, at any time after the filing of said affidavit, and prior to the issuing of the patent for said land, it shall be proven, after due notice to the party making such entry and claiming to cultivate such timber, to the satisfaction of the Register of the Land Office, that such person has abandoned or failed to cultivate, protect, and keep in good condition such timber, then, and in that event, said land shall revert to the United States.

QUERCUS LOBATA.

The group of Oaks here represented of the Californian white Oak (Quercus lobata) was sketched from nature in the vicinity of the well-known Oak Knoll Farm, Napa Valley. This is a good representative of the species which prevails in the plains of Central California, and in some of the northern valleys, but particularly in Scott's Valley, near Clear Lake, where, increasing in height, it assumes the character of a stately forest. Tall, straight, and attaining an elevation of 60 feet in stem before branching off, this Oak, frequently alternating with the Livi Oak (Q. agrifolia), imparts to the scenery of Central California near the coast range the prairie and park-like appearance which forms its principal charm. Our engraving of this is from a sketch kindly supplied by Mr. Edward Vischer, of San Francisco, a gentleman thoroughly conversant with Californian scenery and Californian trees, and whom we have to thank for a number of masterly sketches of the most remarkable aspects of vegetation in California.

Quercus lobata.

THE PRESERVATION OF WOOD.

ON THE DURABILITY OF WOOD IN GENERAL.

The durability of wood—viz., its power of resisting the destructive influences of wind and weather—varies greatly, and depends as much upon the particular kind of wood and the influences to which it is exposed as upon the origin of the wood (timber), its age at the time of felling, and other conditions. Beech wood and Oak placed permanently under water may last for centuries. Alder wood lasts only a short time when in a dry situation: but, when kept under water, it is a very lasting and substantial wood. Taking into consideration the different kinds and varying properties of wood, and the different uses to which it is applied, we have to consider, as regards its durability, the following particulars:—1. Whether it is more liable to decay by exposure to open air or when placed in damp situations. 2. Whether it is, when left dry, more or less attacked by the ravages of insects which, while in a state of larvæ, live in and on wood. Pure woody fibre by itself is only very slightly affected by the destructive influences of wind and weather. When we observe that wood decays, that decay arises from the presence of substances in the wood which are foreign to the woody fibre, but are present in the juices of the wood while growing, and consist chiefly of albuminous matter which, when beginning to decay, also causes the destruction of the other constituents of the wood; but these changes occur in various kinds of wood only after a shorter or longer lapse of time; indeed, wood may in some instances last for several centuries and remain thoroughly sound; thus, the roof of Westminster Hall was built about 1090. Since resinous woods resist the action of damp and moisture for a long time, they generally last a considerable time; next in respect of durability follow such kinds of wood as are very hard and compact, and contain at the same time some substance which—like tannic acid—to some extent counteracts decay. The behaviour of the several woods under water differs greatly. Some woods are after a time converted into a pulpy mass. Other kinds of wood, again, undergo no change at all while under water—as, for instance, Oak, Alder, and Fir. Insects chiefly attack dry wood only. Splint wood is more liable to such attack than hard wood; while splint of oak wood is rather readily attacked by insects, the hard wood (inner or fully developed wood) is seldom so affected. Elm, Aspen, and all resinous woods are very seldom attacked by insects. Young wood, which is full of sap and left with the bark on, soon becomes quite worm-eaten, especially so the Alder, Birch, Willow, and Beech. The longer or shorter duration of wood depends more or less upon the following:—*a*. The conditions of growth. Wood from cold climates is generally more durable than that grown in warm climes. A poor soil produces as a rule a more durable and compact wood than does a soil rich in humus, and therefore containing also much moisture. *b*. The conditions in which the wood is placed greatly influence its duration. The warmer and moister the climate the more rapidly decomposition sets in; while a dry, cold climate materially aids the preservation of wood. *c*. The time of felling is of importance: wood cut down in winter is considered more durable than that felled in summer. In many countries the forest laws enjoin the felling of trees only between November 15th and February 15th. Wood employed for building, and not exposed to heat or moisture, is only likely to suffer from the ravages of insects; but if it is placed so that no draught of fresh air can reach it, to prevent accumulation of products of decomposition, decay soon sets in, and the decaying albuminous substances acting upon the fibre cause it to lose its tenacity and become a friable mass. Under the influence of moisture fungi are developed upon the surface of the wood. These fungi are severally known as the "house fungi" (Thelephora domestica and Boletus destructor), and the clinging fungus (Merulius vastator). They spread over the wood in a manner very similar to the growth of common fungi on soil. Their growth is greatly aided by moisture and by exclusion of light and fresh air. A chemical means of preventing such growths is found in the application to the wood of acetate of oxide of iron, the acetate being prepared from wood vinegar. Wood is often more injuriously affected when exposed to sea water, when it is attacked by a peculiar kind of insect known as the bore worm (Teredo navalis). This insect is armed with a horned beak capable of piercing the hardest wood to a depth of 36 centimetres. These insects originally belonged to and abound in great number in the seas under the tropical clime; but the Teredo navalis is met with on the coasts of Holland and England.

PRESERVATION OF WOOD IN PARTICULAR.

The means usually adopted to prevent the destruction of wood by decay are the following:—1. The elimination, as much as possible, of the water from the wood previously to its being employed. 2. The elimination of the constituents of the sap. 3. By keeping up a good circulation of air near the wood, so as to prevent its suffocation, as it is termed. 4. By chemical alteration of the constituents of the sap. 5. By the gradual mineralisation of the wood, and thus the elimination of the organic matter.

DRYING WOOD.

1. Thoroughly dried wood remains for a long time unaltered while in a dry situation, more especially so when dried by so strong a heat that it becomes browned. When timber has to be put into a damp situation, it should, after having been well dried, be first coated with a suitable substance, to prevent the moisture penetrating into the wood. This purpose is attained by coating the wood with linseed oil, so-called Stockholm tar, coal tar, creosote, and other hydrocarbons. Hutin and Boutigny adopt the following method to prevent the absorption of moisture by wood that is put into the ground. The portion of the post or wood to be buried is first immersed in a vessel containing benzol, petroleum, photogen, &c., and when taken out is ignited and thus charred. When extinguished, the wood is put to a depth of from 3 to 6 centimetres into a mixture of pitch, tar, and asphalte, and next the entire piece of wood is thoroughly painted over with tar.

ELIMINATION OF THE CONSTITUENTS OF THE SAP.

2. The constituents of the sap are the chief cause of the decomposition of wood, and they should consequently be removed. Many plans are adopted. In order that the wood may contain the smallest quantity of sap, it should be felled during the winter months. The constituents of the sap can be eliminated from the felled tree by three methods:—*a*. By treatment with cold water, with which the wood must be thoroughly saturated, to dissolve the constituents of the sap, which are removed when the wood is exposed to a stream of water. It is evident that with large timber a long time is necessary to ensure perfect saturation. *b*. By employing boiling water the sap is removed much more quickly and efficiently. The pieces of wood are placed in an iron vessel with water and boiled. Large pieces of timber cannot be treated in this manner, but are immersed in a cistern in which the fluid is heated by means of steam. According to the thickness of the wood, the boiling occupies some six to twelve hours. *c*. By treatment with steam (steaming of wood)—the most effectual method of removing the constituents of the sap, the hygroscopicity of the wood thus treated being rendered much less, while the wood is far more fitted to resist the effects of the weather. The apparatus employed in carrying out the method consists of a boiler for the generation of steam, and a cistern or steam chamber for the reception of the wood, this chamber being constructed of masonry and cement, of boiler plate, or being simply a large and very wide iron pipe. In most cases a jet of steam is conveyed from the boiler to the steam-chamber, where it penetrates the wood, and dissolves out the constituents of the sap, which, on being condensed, is allowed to run off. In the case of Oak, this fluid is of a black-brown colour; with mahogany, a brown-red; with linden wood, a red-yellow; and with Cherry tree wood, a red, &c. The operation is finished when the outflowing water is no more coloured. The steamed wood is dried in the air or in a drying room; it loses 5 to 10 per cent. in weight by the process, and becomes of a much darker colour. The steam is sometimes worked at a temperature of above 100°, but generally the contents of the steam chamber are maintained at 60° to 70°. Towards the end of the operation some oil of coal-tar is introduced into the boiler, and is consequently carried over with the steam, impregnating the wood. The removal of the sap can also be effected to some extent by means of mechanical pressure between a pair of iron rollers, which are gradually brought more closely together. Another method is by means of air pressure. Barlow employs for this purpose a metal case in which the wood is enclosed, and to one end of which an air-pump is attached. Air being forced into the tube or case, the sap flows away at the end opposite to which the pump is attached. But both these methods are costly and not in all cases applicable.

AIR DRAINS.

3. The construction of air drains or passages around woodwork to be preserved is, where the method is applicable, a great aid to the preservation of the wood. The consideration of the best means of effecting ventilation in this respect, is not a matter with which we can deal in this work. It is sufficient to say, that in many instances the air channels are connected on the one hand with the open air, and on the other with the chimney.

CHEMICAL ALTERATIONS OF THE CONSTITUENTS OF THE SAP.

4. One of the most useful and most effective means of preventing the decomposition of wood is by effecting a chemical change in the constituents of the sap, so that fermentation can no longer be set up. To this class belongs the well-known plan of protecting woodwork that is to be exposed to the action of the moisture of the earth by charring the wood, either by fire or by treatment with concentrated sulphuric acid, so that the wood is coated to a certain depth with a layer of charcoal, the charcoal acting as an antiseptic. The charring or carbonisation of the wood can be effected either with the help of a gas flame or the flame from a coal fire. The apparatus of De Lapparent, invented for this purpose, became very generally employed in 1866 at the dockyards of Cherbourg, Pola, and Dantzic. According to another method the wood is impregnated throughout its whole mass with some substance that either enters into combination with the constituents of the sap, or so alters their properties as to prevent the setting up of decomposition. To this class belong the four following methods, these being the only ones that have met with any more extensive use.

1. Kyan's preserving fluid is a solution of bichloride of mercury of variable degree of concentration. In England a solution of 1 kilo. of corrosive sublimate in 80 to 100 litres of water is generally employed for railway sleepers. The timber is laid in a watertight wooden trough, containing the solution, where, according to its size, it remains a longer or shorter time. In Baden the wood remains in the kyanising solution, when it is to be impregnated to a depth of—

82 m.m.	for 4 days	180 to 240 m.m.	for 14 days.
85 to 150	,, 7 ,,	240 to 300	,, 18 ,,
150 to 180	,, 10 ,,		

the solution consisting of 1 kilo. of sublimate to 200 litres of water. The prepared wood is washed with water, rubbed dry, and then placed in sheds free from exposure to rain and strong sunlight. The principal action of the bichloride of mercury is to convert the albumen of the sap into an insoluble combination, capable of withstanding decomposition, while the bichloride becomes gradually reduced to protochloride of mercury (calomel). A great objection to this method is the danger to which the carpenter or joiner who may afterwards shape the wood is exposed, the free chemicals acting upon his system through his hands, nostrils, and mouth. In England wood to be varnished is seldom kyanised. Erdmann remarks upon this plan of preserving wood that the interior of the log is still left in its original condition. To answer the objection, the kyanising has been made more effective by placing the wood into a water-tight trough, with the solution of sublimate, and by a great pressure of air thoroughly impregnating the wood. Kyanising by this method becomes, however, as expensive as any other impregnation method. Recently there has been substituted for the pure bichloride of mercury a double salt of the formula $HgCl_2$ to KCl, obtained by decomposing a solution of carnallite with oxide of mercury.

2. Burnett's patent (1840) fluid consists of 1 kilo. of chloride of zinc dissolved in 90 litres of waters. Wood treated with Burnett's fluid has been buried in earth for five years without undergoing any change, while unprepared wood buried for the same length of time has been totally destroyed. Chloride of zinc has been much used in Germany as an impregnating material. Besides this salt sulphate of copper and acetate of oxide of zinc—pyrolignite of zinc (Scheden's method), have been employed. The action of the copper and zinc salts may be explained by considering that the metallic oxides of the basic salt formed during seasoning, separate and combine with the colouring matter, tannic acid, resin, &c. of the wood, to form an insoluble compound.

3. Bethel's (1838) patented method consists in treatment under strong pressure with a mixture of tar, oil of tar, and carbolic acid, this mixture being known commercially by the name of gallotin. In

and near London, wood thus treated has remained eleven years in the earth without undergoing change; other pieces of timber so treated were subjected to the action of the sea for four years and still were in good condition. Vohl employs for preservation peat and brown coal creosote; Leuchs uses paraffin. Such agents, however, render wood treated with them highly inflammable.

4. Payne's method. This includes two patents, the first having been taken out in 1841. Both are based on the impregnation of the wood—first with one salt, and next with another salt, which is capable of forming a precipitate insoluble in water and sap of the wood with the first. The first solution is usually one of sulphate of iron or of alum, then follows a solution of chloride of calcium or of soda. The wood to be impregnated is placed in a vessel from which the air is exhausted, the first solution being then admitted, and subsequently pressure is applied. The first solution being removed, the second is admitted, and pressure again applied. It is necessary to dry the wood partially between the two impregnations. Payne's method, much used in England, possesses, moreover, the advantage of rendering the wood somewhat uninflammable. The same effect results with the methods of Buchner and Von Eichthal, who impregnate the wood with a solution of sulphate of iron, and then with a water-glass solution, whereby the pores of the wood are filled with ferro-silicate. Ransome attains the same end by an impregnation with a water-glass solution and subsequent treatment with an acid. It is found that the treatment of wood according to the above methods is generally attended with good results. A method of impregnation with materials forming an insoluble soap, oleate of alumina, oleate of copper, &c., patented in 1862, has given some moderate results on a small scale.

MINERALISING WOOD.

5. When the terms mineralised, petrified, metalised, or incrusted are applied to wood, they include the meaning that the wood has undergone impregnation with an inorganic substance, which has so filled the pores of the wood that it may be said to partake of the characteristics of a mineral substance. Suppose that the wood has become impregnated with sulphate of iron, when exposed to the rain the sulphate will be gradually dissolved out, in time leaving only a basic sulphate. By the researches of Strützki (1834), of Apelt in Jena, and of Kuhlmann (1859), the influence of oxide of iron upon wood fibre has been rendered very clear. Wood impregnated with basic sulphate of iron ceases to be wood after some time.

BOUCHERIE'S METHOD OF IMPREGNATION.

6. This method consists in the impregnation of the wood with the necessary substance, in a manner similar to the natural filling of the pores with sap; that is to say, the solution is introduced into the tree from its roots, and is thus made to take the place of the sap in all parts of the timber. When the tree is felled the root end is placed in a solution of the salt (sulphate of copper, acetate of iron), and allowed to remain for some days; at the end of the required time the wood will have become completely impregnated with the salt. Occasionally this method is employed in colouring woods, colouring matter being used instead of, or as well as, the salt. The Linden, Beech, Willow, Elm, Alder, and Pear tree can be treated in this manner. The Fir, Oak, Ash, Poplar, and Cherry tree do not, however, absorb the impregnated fluid sufficiently.—*Rudolph Wagner.*

COLOURS OF CUPRESSINEÆ.

BY JAMES McNAB.

There is an unusual circumstance this year connected with the appearance of a large group of various species of Cupressineæ cultivated in the Royal Botanic Garden, Edinburgh, which is worthy of being recorded—that is, the want of the usual reddish-brown tint which many of the species present at this season of the year, more particularly those indigenous to the eastern hemisphere. From many years' observation I have remarked that a large proportion of species belonging to the genera Thuja, Biota, and Cupressus, although perfectly green during the summer months, generally assume more or less of a reddish-brown tinge in autumn and winter, and return to their usual green colour during the spring months. Some of the varieties, such as the columnar Biota orientalis elegantissima and the globular Thuja aurea, are generally quite brown in winter, but during the spring months they assume the ordinary green tint, while in summer they take on a rich golden hue. Towards autumn the golden tint disappears, and is succeeded by the ordinary green colour of the original species, and finally they return to the brown, or winter, tint. In the nursery grounds of Messrs. Dickson & Sons, at Inverleith, is a number of plants of Biota orientalis elegantissima, received from Orleans last autumn, and lifted while in their golden condition. These plants have kept their colour throughout the winter, and still possess the rich golden hue. This season, with the exception of the Biota orientalis tatarica, which is now conspicuous in various parts of the Botanic garden, on account of its reddish-brown colour, most of the eastern species are now of the richest green, and have been so during the autumn and winter months. The golden varieties just noticed have every appearance of passing at once from the autumn green to the golden summer tint. The cause of this remarkable anomaly I attribute to the great want of sunshine during the past summer and autumn, bright weather greatly assisting in maturing the juices, and so enabling the plants to go through their ordinary periodical phases. The Cupressineæ from the western hemisphere do not exhibit the same marked difference which is generally noticed in the eastern species, still in some instances a very slight brown or dull green tint is often observable. The higher brown tints are chiefly seen in varieties which, I suspect, have been produced in nurseries or gardens, and are evidently hybrids between eastern and western species. The Biota cristata, which was received from America some years ago, after a fine summer shows more of the brown winter colouring than any other American variety known to me. The same remarks hold good with several species of New Zealand Conifers, cultivated under glass, such as the Dacrydium cupressinum and the D. Franklinii. In general both these species take on a reddish-brown tint during the winter months; but this year the Dacrydium cupressinum, although slightly browned in the conservatory, is nothing when compared with the dark tints of former years, while no perceptible difference is this year observable on the plants of D. Franklinii, whether growing in the conservatory or in the open air. Numerous other examples might be quoted, but I think sufficient have been given to direct attention to this subject, and to elicit observation upon it.

Buxus vulgaris pyramidata.—One of the most remarkable and valuable novelties which has appeared for a long time is a perfectly distinct variety of the Tree-Box, which has been raised by M. Briot, director of the State Nurseries at Trianon, and is thus described by M. Carrière in the last number of the *Revue Horticole.* "It has numerous branches, which grow erect in a very regular manner, so that the tree has one of the most perfectly conical shapes imaginable, and it is moreover a vigorous grower, attains large dimensions, and has broad leaves of a handsome green colour; it forms of itself, without requiring the least clipping, splendid natural pyramids, which, when planted in an isolated manner or in rows, produce a very fine and pleasing effect; in short, it is one of the most ornamental trees that can be employed amongst choice subjects in the embellishment of pleasure-grounds." M. Carrière also very justly directs attention to the very great merits which the varieties of the Box possess in their almost innumerable diversities of foliage, their evergreen character, and their undoubted hardiness.

Tree Planting by the Sides of Railways.—The Pacific Railroad Company are planting large numbers of quickly-growing trees along the track of the road, and particularly along the sides of the principal cuts. The preliminary work was commenced last season by ploughing up the right of way, 200 feet wide, where a considerable number of acres were planted, and 40,000 trees were set out, which are doing well. On the last year's prepared ground there is room for half a million trees. This year they are to break the ground up along the whole line of their road, each side of which will be planted with Oak, Hickory, Black Walnut, soft and hard Maple, Larch, white and gray Willow, and Box Elder. In addition, the Land Department of the Company has broken 120 tracts of 15 acres each, at different stations, where they will plant trees intended for the protection and adornment of the villages and towns that are to grow up around these stations.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Dwarf Chinese Privet (Ligustrum sinense nanum).—This variety differs from the type in having a dwarfer and more compact habit, which renders it an excellent subject for the margins of shrubberies, &c., and for small town gardens, or any position in which a plant of neat and bushy appearance with persistent or semi-persistent foliage, like that of Lig. ovalifolium, may be required. It has been already largely employed by M. Edouard André in some extensive park plantations.

Cuttings of Conifers.—In planting cuttings of Conifers, it will be found by far the best plan always to use strong well-ripened wood. In this respect, Conifers differ from the greater number of herbaceous plants, which often succeed best when the cuttings are taken from young shoots. Cuttings of Conifers with well-ripened wood are not very liable to damp off, and they root more speedily and grow faster than cuttings taken from young and slender shoots. Cuttings from some other trees, such as Poplars, Willows, Planes, &c., grow so much faster and better when they are made from shoots with strong well-ripened wood, as hardly to admit of a comparison between such cuttings and any others.

CYCADS.

Both at home and abroad choice bits of scenery may often be met with that are well worthy of imitation in our gardens, both under glass and out-of-doors. Such a combination, for instance, of striking forms of vegetation as that represented on the annexed page could not fail to have a pleasing effect in a plant stove arranged in the natural style, which is what should be aimed at quite as much under glass as in our ornamental grounds. The Palm-like figure of the noble Cycas circinalis, in the centre, gives a good idea of the kind of effect which such plants produce when set in conspicuous positions in our plant houses, and accompanied by suitable surroundings. The small Aloe-like plant on the left is Lomatophyllum borbonicum, still a somewhat rare plant in gardens. Though Cycads to some extent resemble Palms, Pines, and Ferns, yet they possess features which prevent them from being mistaken for any of these types of vegetation. Their head quarters may be considered to be Australia and the Cape of Good Hope, especially along the frontiers of Kaffirland. There are, however, numerous outlying members of the order scattered through South America and the West Indian Islands, various parts of Asia, Madagascar, the South Sea Islands, and Mexico. Cycads in some instances have a grotesque and weird look about them; they have in general a simple, erect, stout cylindrical stem, bearing a large crown of pinnate leaves, which are very coriaceous in texture. They produce large cones, which enclose the seeds, the male and female flowers being set upon separate plants, *i.e.*, they are diœcious. From this general description there are, however, a few exceptions, as, for instance, in the case of Bowenia spectabilis, a plant from Rockingham Bay, North Australia, the foliage of which is bipinnate, *i.e.*, twice divided, and it is the only species with compound leaves known to belong to this family of plants. Some Cycads seem, when old, to become branched; of this class several examples exist in the Botanic Gardens of Amsterdam. Prominent among them is a magnificent example of Encephalartos Caffra, which has a straight stout stem 18 feet in height, at which point it divides into two equally strong crowns, each bearing a head of well developed leaves; in the same garden (which is wonderfully rich in grand plants of this order) may also be seen an example of Cycas revoluta, with a very stout stem, bearing five well developed crowns, and I have myself had a plant of the same species with two crowns. The only other instance of a Cycad becoming branched which has come under my notice was that of a male plant of Cycas circinalis, of which the Amsterdam garden possesses a plant with three branches. It may be added that species from the western hemisphere have stems that are quite slender. Cycads are as a rule slow in growth; and they must be allowed to grow when they please, and when they choose to lie dormant for a season, which they frequently do, any attempt to force them into growth by means of bottom heat or other stimulants seldom has the desired effect, and the large and fine specimens which adorn many of the conservatories of Europe must be of very great age, for from observations taken respecting the progress of trunk-making in Encephalartos Caffra, under cultivation, it would seem that nearly twenty years are required to form one foot of stem or trunk, whilst a plant of Macrozamia spiralis, growing in a collection near London, and which at one time belonged to the Messrs. Loddiges, of Hackney, has as yet but one foot of stem, although the plant has been in cultivation some thirty years at least. This peculiarly slow growth has its advantages as well as its disadvantages; for whilst those who have large specimens need have little fear of their outgrowing even limited accommodation, those, on the other hand, who have only small plants will feel dissatisfied because they cannot be made to quickly assume more noble proportions. Owing to this naturally slow growth, and the plants in many places being subject to destruction from bush fires, Cycads are not found in their native habitats in such profusion as are Tree Ferns and other plants that grow up quickly, and that therefore soon repair such damage. They are, however, by no means delicate in constitution, for the South African and the majority of the Australian kinds will thrive well in the open air during summer, and if sufficiently large, are grand objects for producing a sub-tropical effect in our flower gardens. The kinds about to be enumerated comprise the majority of the species in cultivation. Recently, however, several new forms have been introduced, with which I am unacquainted, but which will doubtless prove valuable as ornaments to our conservatories.

CYCAS.

To this genus, which gives its name to the order, few species belong. C. circinalis, revoluta, squarrosa, media, siamensis, inermis, glauca, Rimuniana, and Rumphii comprise all the kinds with which I am acquainted; the first is common in India and the islands of the Indian Archipelago, and furnishes a coarse kind of Sago, which is obtained both from the pith of the stem and also from the pounded nuts; the second species is a native of China and Japan, and also furnishes a quantity of inferior Sago, a circumstance which has led to their being erroneously called Sago Palms. Throughout Germany, but in Saxony especially, the leaves of this plant are always carried by mourners at funerals, and even friends of the dead who cannot attend the funeral are expected to send a leaf of this Cycas to lie upon the coffin. Thus leaves often fetch from one to three shillings each, according to size, and they are consequently largely imported for that purpose.

ENCEPHALARTOS.

The different species belonging to this genus are South African, and mostly of large growth. Their stout cylindrical stems contain a quantity of farinaceous matter, which is eaten by the Kaffir tribes, and has thus led to the plants being called Kaffir-bread trees. They require thorough drainage, and should be potted in good rich sandy loam. Nearly all the species succeed well under conservatory treatment in this country; the principal kinds are E. Caffra, Lehmanii, horridus, latifrons, lanuginosus, brachyphyllus, Ghellinckii, villosus, Altensteinii, Barterii, M'Kenii, giganteus, cycadifolius, tridentatus, and Natalensis; other names may be found, but I have not seen the plants to which they are given, and indeed, some of the above in all probability are varieties only and not distinct species.

DION.

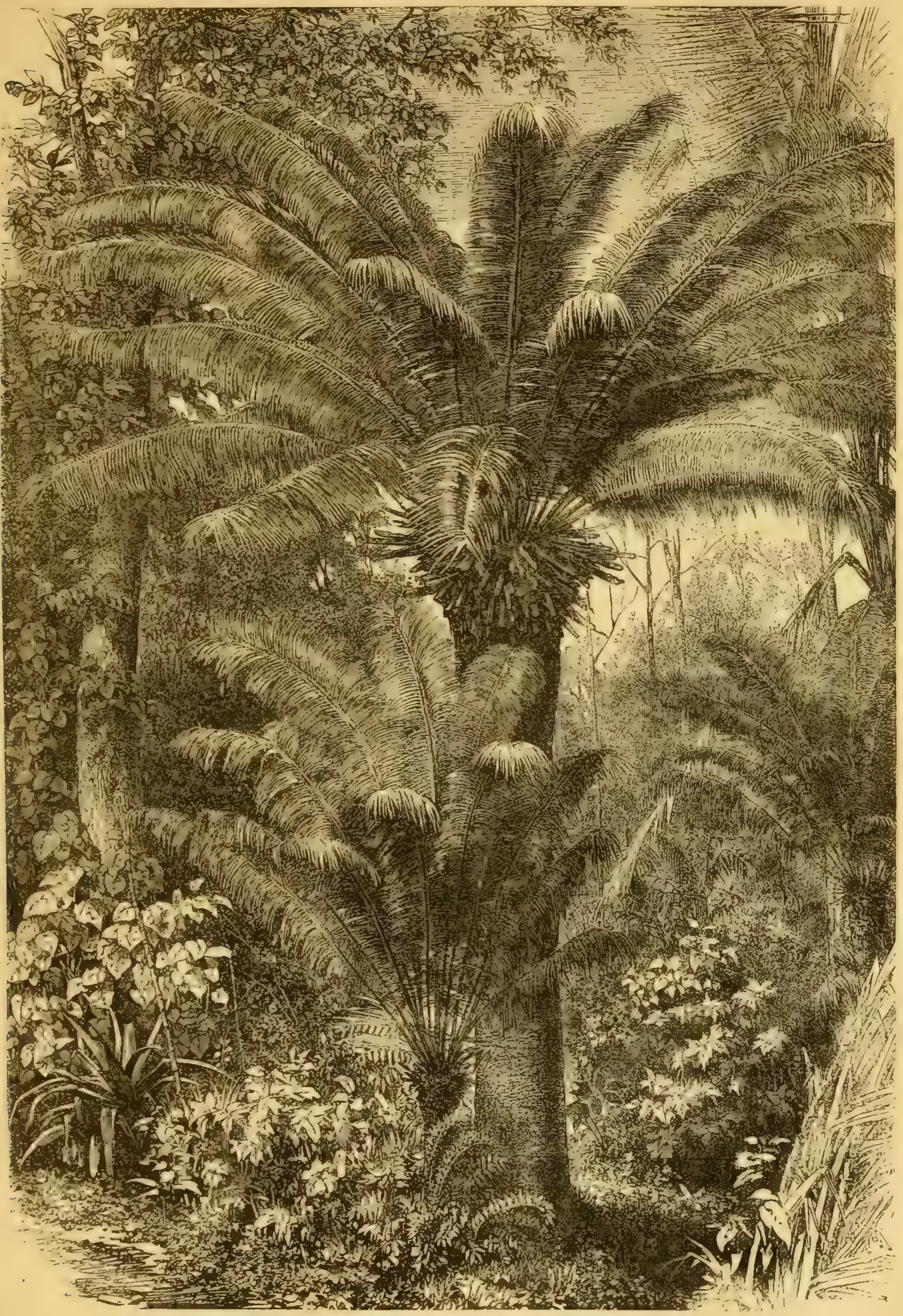
We have but one species of this genus in cultivation, viz., D. edule, which is a plant of very slow growth. The largest stems of it which have come under my notice have not exceeded 2 or 3 feet. The leaves are pinnate and very rigid in character. The seeds are large and yield an abundance of farina, which is used as arrowroot. The soil in which this plant succeeds best is a good rich loam, to which may be added a liberal quantity of sharp sand, and when the young leaves are pushing up a little warmth is of advantage; but at other times it should be kept in the greenhouse or conservatory, like the majority of the order to which it belongs; it requires little or no water during winter. It is a native of Mexico.

STANGERIA.

This genus would appear to be peculiar to Natal. When specimens of its leaves were first sent home, so thoroughly did they resemble a Fern in venation, that the plant was described under the name of Lomaria eriopus. Further discoveries, however, dispelled this illusion, for it was found to make a stout, smooth napiform trunk, to produce its seeds in ovoid cones, and, in fact, to be very nearly related to Encephalartos, although differing from that genus in general appearance. S. paradoxa and S. schizodon are the only species with which we are acquainted; and the latter, which is of recent introduction, may eventually prove to be a variety only of paradoxa. The leaves are pinnate, the pinnæ being usually oblong-lanceolate and obtuse, more or less serrated at the edges, and about 2 or 3 feet long. The treatment just given for Dion edule suits the Stangerias well.

CERATOZAMIA.

This is a genus of Mexican Cycads, which differ from true Zamias principally in having two small horns upon the scales of the cones, whilst in Zamias they are quite smooth. They have long handsome pinnate leaves, and are fine ornaments in our stoves. They like good drainage, and for soil good loam and sand. The kinds at present in cultivation are C. mexi-



CYCAS CIRCINALIS.

cana, Miqueliana, Kusteriana, and one or two others which I have not seen.

ZAMIA.

The plants belonging to this handsome genus are principally natives of Central America and the West Indian islands; they consequently require a stove temperature. The principal representatives of the genus at present in cultivation are Z. furfuracea, tenuis, eriolepis, fusca, picta, media, angustifolia, integrifolia, debilis, calocoma, Lindleyana, Skinneri, and Sieboldii; in their native countries a very pure starch is obtained from many of these plants; their treatment should be the same as that for the last-named genus, except that a little vegetable mould may be added to the compost.

MACROZAMIA.

The species of which this genus consists are, I believe, all natives of Australia; some of them were at one time placed in the genera Lepidozamia and Catikidozamia, but all have been again brought back, I believe, to the original genus. They are nearly related to Encephalartos, but differ from that genus in the arrangement of their flowers, and a peculiarity belonging to them is that the rachis in a young state is always twisted. In Australia the Macrozamias generally grow in open forest-land, amongst various species of Eucalyptus, Acacia, and various other shrubs, none of which, however, afford them much shade or shelter. The soil in such situations is usually sandy or stony, and by no means rich. One species which has been variously named Catikidozamia McLeayi, Catikidozamia Hopei, Lepidozamia Peroffskiana, and which attains a height of some 60 feet, is never found in such situations, but on the contrary always affects very shady spots about the borders of or in dense scrubs, where the atmosphere is far moister than it is in open situations, and where the soil contains a considerable amount of decomposed vegetable matter. The following are the species usually found in European collections, viz: M. Fraserii, spiralis, Peroffskiana, excelsa, elegans, corallipes, tenuifolia, and cylindrica.

BOWENIA.

I have reserved this until the last, because it is the most recent addition to this order, and contains the only known species of Cycad that has bipinnate leaves. As a genus it would appear to be nearly allied to Macrozamia, the chief point of distinction being its compound leaves. "I have," says a friend, "been paying some attention to the Australian Cycads, and one thing has struck me concerning Bowenia which is the most remarkable of them all, and that is, that it does not associate with the other Cycads, but is invariably found in very shady spots about the borders of dense woods, always growing in rich vegetable mould, and from the positions in which I have found it, I am fully persuaded, although an Australian plant, that in England it will always require to be grown in a warm house with a moist atmosphere," a remark which has been fully verified by practice. B. spectabilis, the only species known at present, was discovered by Mr. Allan Cunningham, some fifty years ago, but mere scraps of specimens of it only were brought home. The honour of introducing the plant into this country in a living state belongs to Mr. Walter Hill, director of the Botanic Gardens at Brisbane, who, together with Dr. Müller, of Melbourne, has done much for the old country in sending us quantities of these extremely interesting members of the vegetable kingdom. G.

THE PAMPAS GRASS AS GAME COVERT.

Those who have travelled through North Wales on foot, and have passed from Conway by the Great Bangor Road, may have noticed at the foot of the Phenmaen Bach mountain, near the entrance lodge of Mr. Darbyshire, at Pendyffryn, a group of several hundred plants of this graceful Grass, covering a large island, and affording fine covert for waterfowl. The last time I saw it there were hundreds, if not thousands, of nodding plumes shimmering in the autumn sunlight, and producing a delightful picture. Scattered through the grounds of Pendyffryn, growing frequently in the clefts of the mountain, are many groups of the Pampas, under which, in that dripping climate, we are told game of all kinds delight to shelter. This place being bounded on the north side by the sea shore, and the group first alluded to being planted within a stone's throw of high tide, it is of course warmer than more inland situations would be, and hence in some measure the success. But still we are sure there are thousands of snug corners in the game coverts of the country where the Pampas Grass might be planted with advantage. The land at Pendyffryn is of the poorest description—little more than sea sand—and, though the plants grow slowly, they may be more hardy in consequence. At any rate, no one need hesitate to plant the Pampas Grass in the poorest soil, if they take the precaution to give it a peck or so of good soil to start in; for, once established, true to its native habitat, it can neither be swamped nor scorched to death. The only thing it suffers from this cold climate is water at the heart; for it is only when water accumulates in the centre of the plant and then gets frozen that it sustains any material injury. In the northern and midland counties, the remedy for this is to gather and tie the leaves together when frost sets in, and then to cover with a hood of straw, so as to throw off the water. Thus protected, the Pampas Grass stood the severe frost of 1860, with the thermometer 6° below zero, in an exposed situation, almost without injury. In the southern or south-western counties the power of the plant to resist frost scarcely demands consideration. I therefore recommend it for covert purposes; and those who use it will not, I think, be disappointed. W. P. A.

PEAT.

Those who have had experience in superior plant-growing, especially if they have lived in different parts of the United Kingdom, know how exceedingly difficult it is to procure good soils, especially good peat, which appears to be almost exclusively confined to Surrey and Kent, and from these two counties the majority of plant-growers are supplied. I have seen Wimbledon peat shipped at Putney for Worcestershire and for other parts of England, and I have also seen it sent out by the ship-load to Florence; for Orchid growing, too, it is sent to France, Russia, and Germany. In years gone by, Orchid peat, a tough, fibrous kind, used to be procured from Devonshire, but Wimbledon has generally been the stronghold for peat for plant-growers. For Heath cultivation, when ripened for twelve or eighteen months, it was exceedingly suitable. Plants did not grow rapidly in it, but the growth was steady and healthful, and the more delicate kinds lived and prospered longer in that peat than in any other. In softer kinds of peat they would grow for a time more rapidly, but, when tested on the score of endurance, they succumbed sooner than others more slowly grown. From Wanstead a useful peat used to be obtained. It was a dark, harsh, uninviting substance to look at, but when it had been aërated for a season many hard wooded-plants did exceedingly well in it. Its qualities were probably mainly mechanical, its hard nature when mixed in small pieces with softer peat having the property of keeping the whole porous for a longer time than a softer and more quickly decomposing soil could have done. I once saw some good peat which had been obtained from near Redditch, but it is not easily procured; and a fine fibrous peat may also be obtained from the Derbyshire Moors. Wrotham Heath, near Maidstone, likewise furnishes excellent material for the growth of Heaths and the finer hard-wooded plants. It is sent to different parts of the country in casks, after being freed from all extraneous matter. A.

Value of Leaves.—Some gardeners lay much stress on the value of tree leaves as a fertilizer. Dr. Nichols of the "Boston Journal of Chemistry" says, that such manure has only one-sixteenth the value of good stable dung.

Peat.—Seeing several inquiries in The Garden and other journals as to where the best peat can be obtained, I have much pleasure in stating that I get the whole of my supplies of that soil from Mr. Epps, of Lewisham. The fine Ferns, Orchids, Palms, &c., at Sundridge Park have been planted in it, and prove by their luxuriant growth that it suits them perfectly.—John Wills, *Onslow Crescent, Onslow Square.*

THE VOICE OF SPRING.

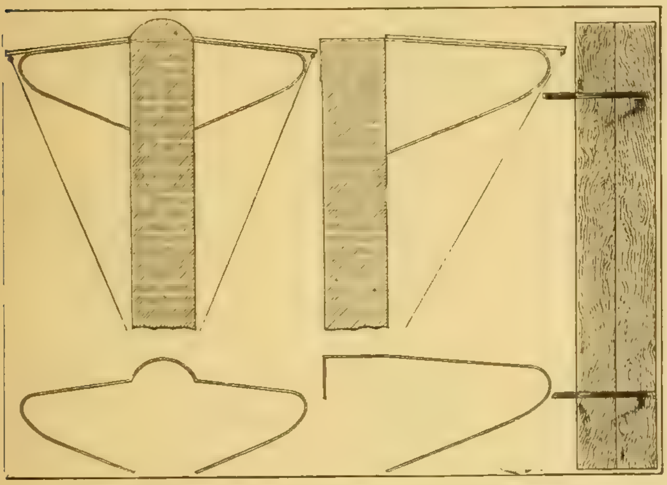
Then that Thorn—too fond for waiting—
Leaf with blossom antedating—
All his naked ebon branches
With sweet snows abundant blanches.
These, therefore, the breezy showers
Sweep like far-seen avalanches,
Sudden from our Island Bowers,
Nor let their silver magic stay
To match the blossomed Hawthorn-spray.
Next in fragrant order meet,
To the season's summons sweet,
Violet, Primrose, Daffodilly,
Cowslip, Harebell, white Wood-Lily,
All around by bank and field,
Sweeping common, dell concealed,
Their soft charms to Zephyr yield.

GARDEN STRUCTURES.

A NEW WALL COPING.

For the drawings and the following description of this mode of protecting a wall we are indebted to Mr. C. J. Cox, of Ravensbourne Lodge, Catford Bridge, who has invented it and proved its merits, and who is also the inventor of the Sidney seed sower.

The screen is formed of two or three half-inch boards 12 feet long screwed on to two pieces of bar iron as a bracket. One end of the bar goes over the top of the wall with the end turned down about 6 inches to hold it at the back; then from the edge of the bricks the iron must be long enough to take two or three boards as required, with two screws to each board; the iron is then bent down and back for the end to rest against the wall and form the bracket. To make the screens, place the two or three boards on the ground close together, then screw on the irons 3 feet from each end, taking care that the irons stand out far enough to take the thickness of the wall from the edge of the first board. The screen is now made, wanting only the cords to tie it down to prevent its being lifted by the wind. An iron eye is used, which is screwed in near each iron, and the cord is fastened to a staple in the wall. Should there be a coping to the wall the blacksmith can fit one iron and make the others like it. If preferred, the end of the iron with a hole in it can be secured on the top of the wall with an iron pin, to be left for future years when the screen is removed. The brackets should be made of $\frac{3}{4}$-inch bar iron three-sixteenths of an inch thick, the screws of large size for the thin wood. The irons for the double screen can be made in one piece, as shown in the illustration. These screens are quickly put up and as quickly removed, are of little cost, and will last for many years, and one great convenience is that when not in use they pack closely one inside the other; any blacksmith can make the irons and gardeners can put them together. Mr. Cox's are up for the third season, and have not required any alterations. The village blacksmith made the irons and Mr. Cox made the screens.



View and details of Mr. Cox's Wall-Coping and its supports.

Garden Wheelbarrows.—I should feel obliged if some of your contributors would be good enough to insert in the next number of The Garden a sketch of the best style of common wooden garden wheelbarrow, ordinary size, giving the dimensions of the various parts, and any other necessary particulars, as those made in this part of the country are so clumsy and heavy as to be comparatively worthless.—James A. Mather, *Spencersyde, Hamilton, N.B.*

A man who has travelled through New Jersey says that he saw some land so poor that you couldn't even raise a disturbance on it.

ANCIENT EMPLOYMENT OF FLOWERS.

In the classical authors there is no mention either of nursery gardens or of florists, nor is an allusion ever met with to a posy or a nosegay. The nearest approach to the latter is in the secondary, but rare, use of the word, "fasciculus;" while the nearest to the name of florist—understanding, by his gentle craft, the production and preparation of flowers for decorative purposes—is found in that of "Chaplet-maker," the special and most celebrated employment of flowers with the ancients being for crowns and garlands, the manufacture of which assimilated, in a certain measure, to the elegant arts practised by our modern bouquetistes. The practice of wearing chaplets wrought of flowers appears to date from the remotest antiquity, the particular occasions upon which these beautiful ornaments were resorted to being those of festivity and rejoicing. There is plenty of illustration of it in the monuments of primæval Egypt; and, as there is good reason to believe that Egypt itself derived some of its most celebrated usages from the East, in a day still earlier, the probability is that the chaplet is almost coëval with the history of civilisation, which began where the sun rises—in the distant orient. In ancient Egypt the favourite flower was the Lotus, or "Rose of the Nile"—the Nymphæa Lotus of modern botany; though probably not that species alone, since, in some of the Egyptian paintings, the flower is coloured blue. With the Egyptians, at the time when Thebes was the proud and magnificent "hundred-gated" city that Homer describes—say ten to twenty centuries B.C.—as soon as a guest arrived at the residence of any person of distinction, he was presented with a coronet formed exclusively of this exquisite flower, one of the blooms being so placed as to hang forward over the centre of the forehead. The same flower was employed in the religious services of the country, the chaplet form being most usual, as beautifully illustrated in the insignia of Isis—that famous goddess whose very name is a romance, and in reference to whose bounty to mankind the flowers were interwoven with ears of corn. Many other flowers seem to have received much notice with the Egyptians, and to have been employed with taste whenever ornament was needed, as declared by the drawings and the painted linen found in the sepulchres; but the greater portion of the figures are so conventionalised as to forbid identification—a circumstance not surprising, when every succeeding age has at times departed from nature no less widely: witness the "patterns" even of to-day.

From Egypt the love of garlands passed into Greece, in the principal cities of which country, or at all events in Athens, during the pride of its intellectual and social eminence, the manufacture of chaplets was a fixed occupation. Whatever encouragement may have been given to other kinds of handicraft, this one, with the educated Greeks and all who possessed a lively sense of beauty, was deservedly and universally in favour. In Athens, we are told by Aristophanes, there was an established flower-market, where the vendors quickly disposed of what supplies they brought from their gardens.[*] In the same author we read also of the "Myrtle wreath market," where one of his characters, a woman, is represented as maintaining herself by plaiting chaplets of this renowned and delightful shrub.[†] This would be B.C. 430. Theophrastus, also, B.C. 350, distinctly intimates that Roses, Gilliflowers, Violets, the Narcissus, and the Iris—whatever these names may signify—were cultivated extensively for sale. In the social customs of the people, it may be justly inferred that flowers were used with freedom. Brides, at all events, were crowned with flowers, but it was essential that they should be gathered by the bride herself, to purchase the bridal wreath being regarded as an ill omen. What would our brides of to-day, in England, think of their future, did a similar forecast attach to the dainty bouquets wrought so skilfully for their sovereign use? Specially employed for the chaplet worn by the bride was the shrub just named, the common broad-leaved Myrtle, which accounts, perhaps, for a separate market for Myrtle wreaths of different destiny, the fragrant evergreen in the abundance of its white bloom, with faintest shade of blush, being the emblem of love and chastity, and already consecrated to Aphrodité, representative herself, in the beginning, of the purest conception of the world's first principle.

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[*] Acharn, 212.

[†] Thesmoph, 450.

CHAPLETS AS EMBLEMS OF VICTORY.

Chaplets were worn also by warriors and heroes, especially upon occasions of military display; these, however, would seem to have been composed not so much of flowers as of twigs of green leaves. Specially entitled to such chaplets, and wearing them as badges of their well-won honours, were the victors in the public games—those noble and exhilarating contests which constituted so fine a feature of the old Greek life. Represented in the athletic sports and gymnastic festivals of the present age—so energetically does old England, out of her inmost and spontaneous nature, preserve in the world all that was best and most glorious in the idea of ancient Greece—the public games of that renowned country had a hold even more powerful upon the zest of its manhood, in the fact of the fame acquired at them taking precedence of all other that could be achieved, and being acknowledged by the gift of immense privileges. At the chief of these ancient games the successful competitors, those, at all events, who finished with *éclat*, were accounted the happiest of mortals; the games themselves, in their origin, and during their best days, were connected with the national religion, and even when tarnished, they still retained their primitive epithet of "sacred." The four principal institutions which went by the name of the games were the Olympic, the Isthmian, the Pythian, and the Nemean; the first so called from the place where they were celebrated—Olympia, in Elis, a state upon the western side of the Peloponnesus, the territory now known as the Morea; and the second from that famous neck of land, the Isthmus of Corinth, where they were held every three years, the Olympic extending the interval to five. Wherever held, and under whatever name, the contests were threefold—gymnastic, equestrian, and musical, and, in every case, of the most brilliant and vigorous character, the Isthmian superadding poetical contests, in which a share was allowed to women—a precedent that a certain university might do well to call to mind. The feature interesting at the present moment consists, however, in the immediate reward of victory having been one of these identical leaf-chaplets; and nothing can more strikingly demonstrate the all-sufficiency of the fame that was the real object of the contests, the desire of triumph that animated the Grecian youth, than the simplicity of the material they were wrought of. At the greatest and most popular of the games, the Olympic, the prize consisted of no more than a chaplet of "Cotinus" or "wild Olive," along with which was presented a "Palm-branch," every successful competitor receiving one of the same kind; while at the Isthmian, the crown was composed simply of Pine (exchanged at one period for Ivy); at the Pythian, of Sweet Bay, in ancient times called "Laurel"; and at the Nemean, originally of Olive, but afterwards of Parsley. Concerning some of the materials employed, there are discrepancies in the allusions of ancient authors, the fact, however, remains—that all were of the utmost simplicity. At the Pythian games, for instance, Apples consecrated to Apollo are said to have formed a portion of the reward, while at their first institution, or before the time of the beautiful but hapless Daphne, who was transformed into the first of the Bay trees, Ovid says the chaplet was wrought of the Esculus. (Met. I. 450, 451). Pindar, whose magnificent odes have reference wholly to these four great sets of games, and are named after them, frequently refers to the "Parsley crown," in language exquisitely poetic, but still with a strangeness of sound that makes one look back to see if the word has been really read aright. The use of this plant, like that of the others, had some kind of mythic origin. In every case the victor received also a "Palm-branch," while the scene rang with the jubilant shouts of the spectators.

DEDICATION OF PLANTS TO THE DEITIES.

Traceable as are the games to the earliest periods of Grecian civilisation and religion, the consecrated plants and shrubs being never lost sight of, it is not surprising to find these identical shrubs and plants originally devoted to the deities themselves. The Pine was sacred to Pan; the Myrtle, as we have said, to Aphroditė; the Olive to Athenė, and the Sweet Bay, or Laurel, to Apollo. Many another beautiful association of the same kind is met with while perusing the ancient poets, as when Ceres wears her chaplet of Corn and scarlet Poppies; and Euterpė, the celestial virgin who presided over music, one of Jove's "nine blue-eyed flower-producing daughters," her crown or wreath of Roses; "Roses" with the ancients including, however, many other things that are sweet and deep-hued. When the "prima donna" of to-day steps forth in her crown of flowers, and is greeted with a shower of bouquets, she little thinks perhaps that flowers and music have been married ever since the beginning. Upon occasions of sacrifice and worship, the altars and temples were adorned with the foliage of the plants specially dedicated to the god or *genius loci*; and in regard to this it is very interesting to observe that the plants so employed were almost exclusively Evergreens. Very rarely, as in the case of Hercules and the White Poplar, a deciduous one is the kind selected. In this ancient dedication to the divinities of a plant green all the year round, there is more, too, than appears on the surface. Good taste would almost instinctively select such plants, but the substantial reason appears to lie in their symbolic character—the interior or poetic quality which in the days of the myths, and the fables, and

> The dead but sceptred monarchs who still rule
> Our spirits from their urns,

—was a delight so intense to accomplished thought and reverent feeling, and which, in regard to the significance of evergreens, is so conspicuously recognized in the Old Testament, where the spiritual gifts bestowed upon man by his Father in heaven are again and again denoted by trees of this description—evergreens, and evergreens only; the Cedar, for instance, the Fir, the Myrtle, and the Box. The idea there intended to be conveyed by the citation of evergreens is obviously that of permanence in the gifts that are symbolised; and upon the Grecian side of the blue Levantine water, among the worshippers of those

> Eldest gods,
> Who in no statues of exactest form
> Were palpable,

no doubt there was a deep sentiment that so long as man was pious and just, so long might he rely upon divine succour and the unfailing largess of wealth and protection which he sought to win by means of votive offerings and the practice of virtue.

LEO GRINDON.

(*To be concluded in our next.*)

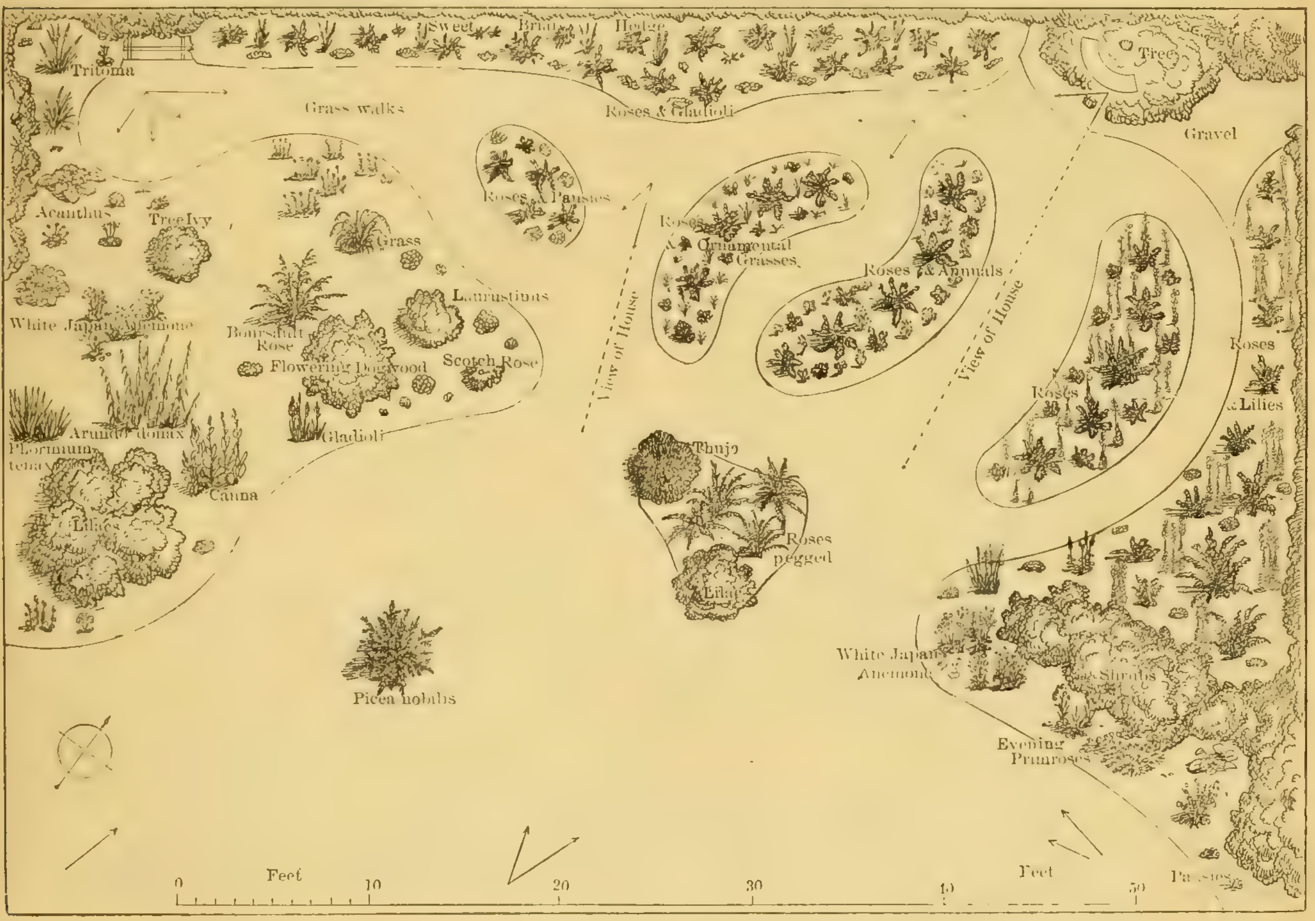
Flowers in Cemeteries.—A cemetery is most certainly the right place for a profusion of flowers. Of all out-door monumental decoration these are by far the most beautiful and appropriate. Those who have money to spend upon the last habitation of their friends and relations, and who piously desire to show their love and sorrow by some sort of outward sign, will act more wisely in paying some annual fee to the cemetery gardener to keep churchyard flower-beds trim and pretty, than in laying out a vast amount of money among stonemasons, resulting in ill-executed angels, or trophies of cannon-balls and swords and cocked-hats, and other such insignia, hinting at the professional career of the deceased. The sums of money spent on these great ponderous symbolical monuments are often very large. But who that has groaned in presence of some hideous specimens of sepulchral bad taste, some terrible combination of cherubs and skeletons, of scythes and hour-glasses, of broken columns and ponderous marble clouds, and who has felt the beauty of one of these flower-begirt graves, will not testify to the superiority of the gardener's work over that of the stonemason? There is, too, a symbolism in the introduction of flowers here which makes them specially fit. These plants have come up from a root which itself was buried in the earth in order that the flower which we admire might bloom. They were put into the ground in the form of seed or bulb with no beauty about them to win our admiration, but they come up in due time arrayed in such splendour of decoration as cannot fail to fill us with admiration first, and then, as we think longer, with hope. They are grasses of the field whose perishable nature has been made before now to typify the insecurity of human life. Moreover, they suggest, at least, a certain continued supervision, a daily tending and care, which favour the idea that those to whose memory they are sacred are still held in recollection by their friends.—*All the Year Round.*

Garden Statuary.—A raw Jonathan, who had been gazing at a garden in the vicinity of New York, in which were several marble or plaster statues, exclaimed, "Just see what a waste! Here is no less than six scarecrows in this little ten-foot patch, and any one of 'em would keep the crows from a five-acre field."

GARDEN DESIGN.

A SMALL ROSE GARDEN.

The annexed illustration is a representation of an instructive little Rosery designed for a villa garden. Though small, there is, however, plenty of variety in it, and there is, too, no want of room for comfortable inspection of the beds or for passing a friend on the walks, which are of Grass. The beds are designed so as to leave large spaces of Grass at their extremities, so that there may be ample accommodation for visitors without crowding; and these little patches of lawn set off the opposite beds to advantage, while from both lawn and walks are nice views of the surroundings. These are indicated by arrows, which show how a pretty nook or peep is obtained both by looking into and out of the Rosery. Of course, in every instance the form of such a Rosery may be varied; its level may rise or fall, the entrances and exits may be anywhere, upon the principle of providing Grass walks and interspaces. One of the chief advantages of a Grass walk is its saving of room, and there is no edging to obstruct wheeling or other operations. The plants are on their own roots, a system of culture which possesses several advantages; one may, for instance, peg them down on the bed or let them grow up naturally; or, in short, the treatment may be annually varied according to taste. Another point worthy of observing in the annexed plan is the mixing of Roses with plants of other descriptions, such as Roses with ornamental Grasses, Roses with Gladioli, Roses with Lilies, and Roses with choice annuals. Than such combinations as these nothing could be more delightful. Mignonette may be sown broadcast through Roseries with the best results; but not too thickly, for, though it delights in a Rose soil, it is apt to exhaust it too much. On the left of the plan larger spaces have been left than on the right, so as to afford an opportunity for a show of fine-foliaged plants together with innumerable little gems in the foreground. In planting such a garden as this, avoid narrow slips of border, and odds and ends of beds not bigger than tea-trays; on the contrary, have a full and open design. The two projecting masses serve to cut off the garden from too full exposure to the lawn, and in one of these, also, Roses are planted. The views from this little Rosery to the lawn are very picturesque, though the place is small, level, and formal in the outline of the ground. Some fine Cedars and other trees, and an open lawn, however, make up for deficiencies. The plan, it will be observed, has the additional advantage of a bird's-eye view. So that not only is it accurate as a plan, but as the plants are depicted in it on a small scale, the type of vegetation in each part may be recognised. Then, again, the names and not references are given, so that the plan is easily understood in all its parts. This is the second example we have given of a new and, as it seems to us, greatly improved style of garden plans. It will, we trust, lead to much improvement in garden design, as we hope by its aid to give plans of all the best designed gardens in this or other countries.



Plan of a Small Rose Garden.

It is much to be desired that the plan of planting other choice subjects in the usually half-bare beds, as shown above, were generally adopted, as by its means many other beauties may be added to the Rosery. The culture of Gladioli or choice Lilies and the like here and there in the more open spaces between the Roses would not be detrimental to the production of the finest Roses in any appreciable degree.

THE HOUSEHOLD.

HOW TO COOK POTATOES.

There is probably no daily food which is capable of yielding us such a variety of healthful and tasteful dishes as the Potato; and yet many respectable families seem to have but one mode through the entire year, and that with as little care as possible—namely, boiling. Some might be interested to notice a few of the pretty ways in which I have seen them prepared in a pleasant rural home, where the mistress does not think it beneath her to give some time and thought to the planning of nutritious and even fanciful dishes. Do you say "A Potato is only a Potato when you have done and said all?" Ah! my dear Mrs. B., I agree with you exactly—a Potato is only a Potato: but so long as they are made a standard dish on almost every table, is it not better to give the preparation of them a little study and care, rather than to bring them into dinner cold, wet, and indigestible? So, while our husbands and brothers are pondering over the kind best adapted to the climate and soil, let us give a few minutes to the nice preparation of the fine crop they will put into our cellars by-and-bye. Care should be taken to select from the bin all alike in size, being sure to allow them just sufficient time to become nicely crisp and brown at the hour the remainder of the dinner is ready. They should not be allowed in the open oven one moment after "done," there to shrink, as if protesting against delay; neither to be sent to the table to wait five or ten minutes the movements of some tardy husband and children. Mashed Potatoes, that are nicely pared, boiled and dried, seasoned richly with salt, cream, or milk and butter, are always good, always nice, if smoothed down into the dish with care, and prettily spotted with pepper. The mashed Potatoes, left from dinner, make a fancy dish for breakfast, by making into little cakes or patties, with the hand, and frying brown in dripping or butter. The butter should be hot when the cakes are put in. The boiled Potatoes, left from yesterday's dinner, are very good chopped fine and warmed for breakfast in good milk and butter with salt and pepper. When you are boiling your tea-kettle to-night, you can boil half-a-dozen good sized Potatoes, and, when cold, slice them the long way, something less than a quarter of an inch in thickness. In the morning lay them one by one on the griddle, to slowly toast or brown in good butter or fat, salting them carefully and evenly, after placing them in a covered dish. Gentlemen always like these with their coffee; and these, or the Potato balls, are an addition to the tea-table when gentlemen are present. Still another way to fry is to pare the Potato round and round, like an Apple, until all is used, cooking slowly and evenly in a covered "spider," until brown. In the spring, when the Potatoes are poor, difficulty is experienced in preparing them to relish—pare and cut them half an inch in thickness, putting to boil in salted water until tender; then pour off the water and put on cream, or good milk, seasoning and thickening carefully with only a little flour. For those who have no milk, fresh boiling water can be used with nearly as good results. But I am outstretching my limits. For, a little aside, nearly all good housekeepers know the value of Potatoes in yeast, and that grated they make an excellent pudding with the usual additions. After all, perhaps, there is no form which is used, both for excellence and health, equal to the good old-fashioned roasted Potato.—*Cultivator.*

Cabbage Soup.—Cabbage soup is very popular in France, and is made with the *bouillon* of the *pot au feu*, as follows: "Take a large stewpan and line it with a pound or a pound and a half of smoked ham. Cut a Cabbage into four pieces, to extract the stump and the animals who perchance have introduced themselves to the interior, as their flesh is not necessary in the preparation of your soup. Now tie the Cabbage together, place it daintily in the stewpan lined and quilted with ham, and fill up the same to the height of the Cabbage with good *bouillon*. As ham is now the only meat in contact with the soup, boil up briskly. In ten minutes the stewpan will be dry, the Cabbage will have drunk up all the soup, and be one-third bigger than it was. Then fill the stewpan for the second time with *bouillon*, which will this time only diminish by one-half. Fill up for the third time, and cook for a couple of hours. Serve the Cabbage with the ham on a dish, and into a tureen pour the soup in which the ham and Cabbage have been cooked, mixed with some of your primitive *bouillon*."

Removing Fruit Stains.—Wash thoroughly in soap and water, then hold the stained spot over the smoke of lucifer matches. The sulphurous acid gas so suffocating to the lungs, will bleach out the stain.

Raisins from Australia.—We have just seen, says the *Grocer*, a case of Raisins sent over here as a sample of what can be grown and cured by the Australian colonists. This small consignment, the first of its kind that ever reached England, arrived a few days ago from Adelaide. The fruit is of fair quality on stalk, though dark and rather small. It has a deal of bloom on it, not unlike that on Muscatels.

THE FRUIT GARDEN.

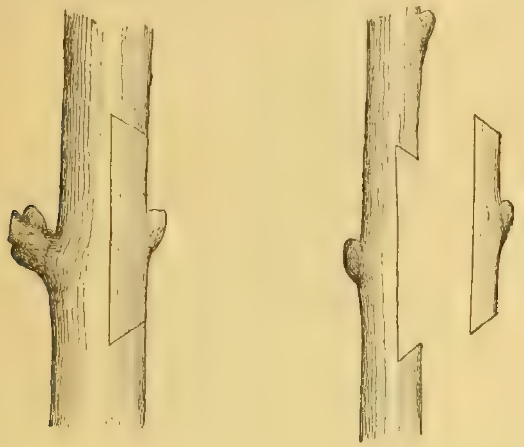
ON PLANTING VINES.

To those who are about to plant Vines, and do not happen to possess Mr. W. Thomson's "Practical Treatise on the Grape Vine," the following extract from that useful work may be of service:—"While I have planted Vines in nearly every possible way, and have found them all succeed well, at the same time there are some methods preferable to others, and I can strongly recommend the following from my own experience of it. It is probably in its details new, but it only requires to be described to commend itself to all who have any knowledge of such matters. I had a large house to plant, chiefly with Muscats, in April, 1864. I had a stock of one-year-old plants in 8-inch pots by me. I cut the rods back to 4 feet in February, and allowed them to stand in a cold Peach-house till the 13th of April, when the border was ready for their being planted. I shook all the earth from their roots, and spread them out on the soil of the border, one Vine to each rafter, and 6 feet apart, covered the roots with 6 inches of soil, and gave the whole a good watering with water at a temperature of 150°, and covered the surface with an inch of dry soil, to prevent, to some extent, the escape of the heat communicated to the border by the warm water. The Vines were just bursting their buds when planted; and, instead of adopting the usual practice of stopping or rubbing off all the buds but one or two, I allowed all to grow, and tied them carefully to the wires. By this means I had in some instances ten rods to one Vine, all of which during the season ran to the top of the house and partly down the back wall, a distance of 30 feet, and many of these rods were as strong as ever I had previously seen a single rod from a Vine the first year it was planted. In January, 1865, when they were cut down, the whole house was a perfect thicket of wood. I cut back all these Vines to within a foot of the front sashes, and trained up two rods from each the following season, fruiting them in 1866; and I need not tell those who know that a plant makes roots in proportion to its leaves, that Vines treated as I have described had an enormous excess of roots formed in the border as compared with others treated on the one-rod and pinching system, and that the bearing rods they made were in proportion to the extent and vigour of their roots in the soil. I measured one of them in December that, when planted in April, was not thicker than a writing quill, and I found that it was 3½ inches in circumference, and had ten rods perfectly ripe to the top of the rafters, a distance of 21 feet. If, instead of permanent vigour and productiveness, an immediate return were the object aimed at, I have no hesitation in saying that such a Vine would have yielded fifty pounds of Grapes the following autumn."

Mr. Thomson mentions another successful method of planting the Vine, but he deprecates the practice recommended by some of laying in a considerable portion of the stem with the roots, with a view to the more rapid development of the plant. He considers that "the vigour and the extent of roots that a Vine will make depend not on the length of the stem laid in the soil, but on the spread of healthy foliage it can get fairly exposed to light and air." The cutting away of the greater part of the heads of trees at the time they are transplanted has long been condemned as a practice not only needless but wrong in principle; and it seems difficult to understand why the Vine should still be condemned to endure the old treatment, in accordance with the saying of a bygone day, that "if you would transplant even your father you must cut his head off." I have often thought, when watching the operation of hedge planting, how much might be gained in the long run, if instead of cutting off the young Hawthorn plants within a few inches of the ground at the time of planting, that operation were deferred to the following season. B. S., *Uppingham.*

VINE-GRAFTING.

This subject has received considerable attention from cultivators of late. Various modes have been tried to improve the Vine by grafting, and the results, favourable and otherwise, have been reported in the different gardening periodicals from time to time. It has been proved that some Vines bear much better when grafted on a different stock than when growing on their own roots; that grafting has been the means, to a certain extent, of preventing varieties subject to cracking and shanking from doing so; and that the fruit is considerably improved in size and quality. My object in writing is not so much to speak of the results of grafting as of the practice of grafting itself. Loudon in his "Encyclopædia" describes a great many methods of grafting the Vine, and quotes his authors on the subject. Others have written their experience on the subject since, but none of them differing much from what is to be found in Loudon's works. Budding has been successfully performed by some; but inarching and grafting are the modes generally practised. There is not much difficulty in grafting the Vine by any of the ordinary methods, but one of the best we have seen is that practised by Mr. Johnston of Terreagles Gardens, near Dumfries. Mr. Johnston has been a zealous and successful cultivator of the Vine for more than thirty years, and has experimented a great deal upon it. He has tried every method of grafting known, and has come to the conclusion that for Vines there is no better method than that which he practised for a number of years with every success, and which he has very properly termed "Dovetail grafting." It is simple, as well as sure, and fruit can be obtained from the graft the first year after its insertion. The grafting is performed in the following manner, and before the sap is in motion. The stock may be of one year's growth, or more; but young wood from one to four years old is preferable. The places selected for inserting the graft should be opposite a bud, or spur, with one or more buds to draw the flow of sap to the scion, which also prevents bleeding. Having selected the stock, the wood should be cut out of it from 2 to 2½ inches in length to a depth corresponding to the thickness of the scion, in the same manner as dove-tailing in carpentry is performed. The scion is then prepared by being cut into the pith, leaving the bud in the middle, and made to fit neatly into the stock, after which it is firmly tied with matting and clayed over, leaving a small hole opposite the bud, so as not to obstruct its growth. A little moss is then tied over all and kept moist for some time till the bud begins to grow. After it has grown some length, the opposite shoots are shortened, and eventually taken off altogether. Mr. Johnston informed us that he has grafted old stunted wood in the above way, where the wood was bare: but in cases of grafting, young wood is to be preferred.—*The Gardener.*



NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Gravenstein Apple.—This variety, commonly used as an autumn Apple, is stated to keep till February and March, if stored in a cool cellar.

Early Beatrice Peach.—According to testimony from the districts of Columbia and North Carolina, this Peach is likely to take the lead as an early variety in America. A North Carolina gentleman has stated that he had a quantity of this variety fully ripe June 15th—two weeks before Hale's Early.

The Paradise Stock.—On the Pommier de Paradis stock, Apples may be planted 18 inches apart each way and when they begin to touch each other may have each alternate tree removed, leaving the plantation at 3 feet apart each way. At this distance they will do to stand many years. The great thing with this stock is that all the large Apples, which are generally strong growers and slow bearers, bear abundantly in two or three years, and produce fine handsome fruit, generally better flavoured than when from the Crab or Doucin stock.—*Scott's Orchardist.*

Low v. High Espaliers.—I do not think low training so good for Pears as for Apples, nevertheless on an espalier scarcely 6 feet high, and with six tiers of branches, I have a Marie Louise which has bloom buds on the lowest as well as on other tiers, and is not by any means what I consider a good specimen of that form of training. If the tree is only to be considered as to the amount of fruit it will yield, then unquestionably an 8 foot trellis is best, but I think such a trellis should consist of iron wires. The advantage of the 6 foot espalier is that it does not cast so long a shadow as a higher one, which in a small garden, with no great amount of room for growing vegetables, is a consideration. But in this, as in most cases, good management will achieve a great deal.—B. S.

Changing the tops of Apple Trees to Pear.—The following curious note on this subject has been sent by a Mr. Tipton, of Burlington, Kansas, to the *Horticulturist* (New York.)—"Pears grafted or budded on bearing Apple trees is the quickest, surest, and cheapest way I ever grew Pears. I never picked better Pears from standards, or any other under-growth for the Pear, than I have picked from old Apple trees topped and budded or grafted with Pears; and they always bore early and profusely. In large Apple orchards are sometimes found worthless, scraggy trees; on such I have practised changing to Pear. I never failed in two years to get a good crop. In some trees, the Pear would die out in five or six years, while others were healthy to my knowledge for eighteen years, and still doing well the last time I saw them, in 1865, in Franklin county, Ohio."

EARLY HARDY FLOWERS.

We have often already written in praise of exotic plants, those unrivalled ornaments of our hothouses, which cause us to forget the frosts of winter, and transport us in two steps from the icy north wind into tropical regions, where we are rejoiced to meet with magnificent foliage, brilliant flowers, and delicious odours. But without losing sight of these wonders, there are in winter other and more modest garden enjoyments of which we can speak.

December has come! Our gardens are desolate and leafless beneath the cold breath of winter. Lovers of plant beauties are in mourning for their favourites, and lament their loss through the slow hours that must pass ere spring returns. If perchance a break of sunshine or a lukewarm day invites them to visit their sleeping plants, their saddened eyes will behold nothing but dried-up branches and withered leaves. Ungrateful in their disappointment, they know not that the winter also has its flowers, its tints, and its perfumes. These are rare beauties, 'tis true, but none the less interesting on that account. This one in the bare field, that under the silent bushes, others on the south fringe of the wood watch for a passing ray of cheering sunshine and bloom for an hour, even at the risk of being chilled and nipped by the returning north wind. Sometimes, anticipating its season, a Sloe tree, all white (not with snow, but with fragrant flowers), or near a sheltering wall some Marigolds, ambitious to brave the rigours of the declining year, enliven with their bloom the lonely ice-bound landscape; while Stellaria media, Senecios, Lamiums, early Daisies, Colt's-foot, and winter Aconite protest with all their might against the encroachments of frosty weather, and day by day renew their stout little corollas. Let us imitate the example which these resolute little flowers set before us, and, instead of giving up our gardens altogether in winter, let us see if some distant region has not, on our account, reserved some flowers that will withstand our harsh climate. We are thankful to say that we shall find some, although their number is small. At any other season we should not notice them—now they possess an intrinsic value for us.

In December and January, the early Japanese Calycanthus (Chimonanthus fragrans) and its large-flowered variety (C. grandiflorus) have their branches laden with Vanilla-scented flowers of a pale yellow colour starred with purple; Rhododendron dahuricum hangs out its Violet bells to the first rays of fleeting sunshine; the Laurustinus, with its empurpled buds, and its white honey-scented umbels of flowers; the Chinese Jasminum nudiflorum, besprinkled with golden stars; Daphne Laureola, with its pale green tubular blossoms, and its foliage glistening like polished steel; the handsome Daphne Mezereum, whose long, fragrant, rosy-purple spikes anticipate its summer suit of leaves; Cydonia japonica, draped in a mantle of scarlet, white, rosy, or flesh-coloured flowers, as the grower may desire; Forsythia viridissima and suspensa, with yellow bell-shaped blooms; Magnolia conspicua, its early buds essaying to burst their white tunics; the nut trees and the Conifers sprinkling the ground as with a shower of sulphur; the Bengal Roses, almost imperishable in their elastic vitality, and daily denying the warm country which gave them birth; the flowers of all these familiar plants would bestow an unexpected charm upon our neglected gardens. And are these all? We have, besides, the Rosemary, with its blue helmet-blooms; the Kerria japonica, just ready to unfold its golden plumes; the Arbutus Unedo, waving its silver bells; the Cornus Mas, to whose yellow little bouquets the eager bee will soon resort; the Lonicera fragrantissima, with its sweet scent of Orange blossom, and the hardy Heaths, whose buds are just entering upon the first shade of their ruby bloom—are all inexpressibly valuable foreign contributions to our winter gardens. Not one of them should be absent from a well-kept garden. Although most of them produce flowers alone at this season, yet these may well console us for the absence of the leaves, and we can happily supply the deficiency from a numerous host of evergreens, whose persistent foliage is now an inestimable boon, and whose great variety of aspect, shape, size, colour, and character cannot fail to satisfy all tastes. For large masses we have Portugal Laurels, Laurus nobilis, Laurus Colchica, Laurus caucasica, the common Laurel, Hollies, Arbutus, Alaternus, Japanese Privet, Baccharis, Garrya, Magnolia grandiflora, the Chinese Beam-tree, Box, Eleagnus, and Buck-thorn. Of Ivy, also, whose perpetual verdure of changeless green (constant alike in winter as in summer, the faithful decorator of the cottage and of the palace, the same in town or wild wood), is so precious when air and space are limited—of this we have an ample store to cover our walls, to hide ugly structures, and to form luxuriant groups of healthy green. For foregrounds and isolated groups, we shall find equally suitable subjects in Mahonias, Laurustinus, Aucuba japonica, Bamboos, Cistus, Cotoneasters, Daphne, Euonymus, Genistas, Privets, Butcher's Broom, Furze, and, if we do not mind the expense, Rhododendrons, Kalmias, Andromedas, Ledums, and Vacciniums; all of which require to be grown in peat soil. Let us now descend from shrubs to perennial plants. The series of winter flowers is agreeably continued by a succession of pretty plants not the less hardy because of their dwarf stature. The Snowdrop begins to pierce the surface and shows its white bells above the snow or the frozen soil. The Primroses are just about to unfold their flowers, while the Violets betray their presence by their sweet perfume; the Christmas Rose bravely throws out its broad white and rosy petals in the keenest frost; the Winter Aconite bursts through the soil, and shows its great golden blooms encircled by a collar of green, like a fine lady of the court of the Valois kings; the Periwinkle will soon show its blue blossoms in the shade; the Pansy spreads its rounded lobes, and boldly shows its black moustache between two diverging rays; the Winter Heliotrope vies in fragrance with the Violet; the Indian Chrysanthemums exhibit on their crimped and plaited heads, colours of the most varied hues; the Palm Cabbages, with their purplish, variegated, satiny leaves, twisted in a thousand pleasing ways, look like pigmy Palms with strange complexions; Hepaticas are radiant with lapis-lazuli, azure, or purple; and the brave little race of alpine plants (Aubrietias, Saxifrages, Ionopsidium, Gentians, &c.) are now beginning to awake to the remembrance of the hour when their brethren will bloom on their native mountains. It is therefore unjust and ungrateful to exclaim in winter—"Everything is dead." The fact is, nothing is dead: perhaps we shall be right in saying nothing even rests entirely. In nature, work is incessant, at all hours, by night and by day, under the snow as well as in the sunshine. There is no stagnation, however things may wear the appearance of sleep or of death. We should, therefore, ourselves obey this grand precept of universal activity, and employ for the common benefit every means which our kind mother Nature has placed at our disposal. Without work, no blessings could exist for us. Human labour is the prime source of all the enjoyments which a man creates for himself, and it not merely provides the means of enjoyment, but from its very nature heightens the zest and intensity of the feeling.

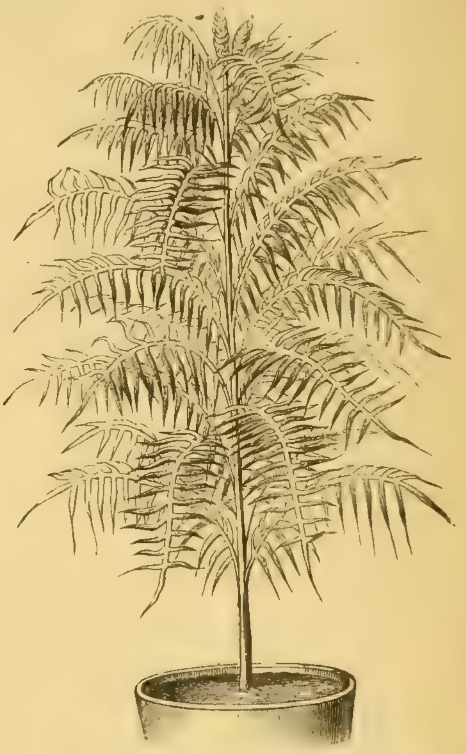
Ed. André.

Everlasting Flowers.—The immortelle of the east (Helichrysum orientale), a native of Asia, has been known in Europe since 1629, but was only first cultivated in gardens about 1815. Its flowers, the symbols of friendship, or tribute to talent and genius, serve to make the garlands of immortelles which ornament the tombs of the dead in Roman Catholic countries. It is cultivated in France, in the communes of Lower Provence, where the soil slopes towards the Mediterranean. It succeeds very well on the slopes of Bandols and Ciota, which are exposed to the south and enclosed by walls of stone. It blossoms about the month of June. It suffers from heavy and continuous rains and strong dews, and only vegetates well on light, stony, and permeable soils. It is propagated by offsets, which are separated from the old stocks. The gathering of the flowers is made in the first days of June, before the bursting of the buds. As the flowers which are insufficiently formed or too full blown are rejected by the trade, it is important not to cut either too soon or too late. The collection is made by women, who tie them in small bundles, which are ordinarily dried on the walls of the enclosure. Finally, young girls are employed to remove the down which covers the ramifications. A kilogramme (2¼ lbs.), by weight of these plants contains about 400 stems, each containing about 20 flowers. Each growing tuft of immortelles produces 60 or 70 stems. A hectare (2½ acres) will contain 40,000 tufts, producing annually 2,400,000 to 2,800,000 stems, yielding 16,000 to 20,000 bundles, or 5½ to 6½ tons in weight, of immortelles. —*Gustave Henge.*

THE GARDEN IN THE HOUSE.

SONCHUS LACINIATUS AS A TABLE PLANT.

Doubtless some one will exclaim, "What! a Sow Thistle to garnish my dinner-table! Preposterous!" But wait a while, there are beauties even in the Sow-Thistle family, though Dominie Sampson might have cried prodigious! had he heard such an assertion made—beauties, too, of such an exquisite kind, as will make you quite forget the stings which the spines of some of our native kinds gave you last summer, when trying to pull them out of the flower border or the rockery. The plant in question is what is termed suffruticose in habit, as, indeed, are several of the species of this genus, which are to be found in the Cape de Verd Islands. It attains a height of some 2 or 3 feet, or even more, and, singular to relate, it is in full beauty during the dull, dreary, dirty, disagreeable weather we have so recently experienced. It should be grown with but a single stem, as in that state its peculiar beauty is displayed to the best advantage. The leaves are long, thin in texture, and pinnate, or perhaps the word pectinate would give a better idea of their appearance, and their colour is bright green. Under artificial light they appear almost transparent, which, added to their pendant arching habit, render this Thistle a really charming subject for the embellishment of the festive board. It may be grown in small pots for the convenience of placing it in ornamental vases, and the soil should be loam, peat, and sand, in the proportion of two parts loam to one of peat and sand; the drainage must be perfect, and during the time it is growing water must be freely supplied, but during winter, when at rest, just sufficient to keep it alive is all that is necessary. As far as my experience of this plant goes, I have found it to strike tolerably freely from cuttings made from the small side shoots, but the stout main shoots will not strike readily. It is a native of the Cape de Verd Islands, and may be grown in an ordinary greenhouse.—*Farmer.*



Sonchus laciniatus as a Table Plant.

Flower Gum.—For what purpose is this employed, and what is shell-lac from which it is said to be prepared?—J. S. [Flower gum is used to render the petals of some kind of flowers more persistent than they naturally would be. It is consequently much in request with bouquet makers. The shell-lac, of which it is prepared (see p. 223) is a resinous gum produced by an insect called Coccus lacca.]

WORK FOR THE WEEK.

PRIVATE GARDENS.

Conservatories.—Camellias are at their best, both in borders and in pots, and Azaleas are coming rapidly into bloom. Such as have been forced, and have done blooming, may be repotted, placed in a warmer house, and syringed twice a day. Rhododendrons in conservatories that have been kept above 40° during winter are now in great beauty; such as are grown in pots, and are required to bloom at once, should be subjected to a little higher temperature than that in which they have been placed. Successions of Cytisus racemosus should be kept up by means of fortnightly introductions to the forcing pit. There is no difficulty now in supplying Callas in flower, for a little extra heat and moisture is all that is requisite until the spathes are formed. Divide the roots of such as have produced suckers, and pot each separately; they should never be dried off. Imantophyllum miniatum is now in great splendour, and should receive a little weak manure water while in flower, especially if the roots are much confined. Hebeclinium ianthinum is one of the most desirable of conservatory spring-blooming plants, for its great Ageratum-like lavender-coloured flower trusses are very striking and distinct from those of its associates. It forms abundance of roots without making many leaves; therefore the roots should be kept within small bounds, and should be fed with manure water. The bright weather of the past fortnight has driven bulbous plants quickly out of bloom, except where well shaded; such as are required for the latest succession should, therefore, be placed out-of-doors against some wall or thick hedge having a north aspect. Liliums of the speciosum section should be kept growing, but they should be kept as yet but sparingly watered; a position for them near the glass is of immense importance in all cases, except in that for the latest supply, which may be set out of doors. Pot Petunias in loam mixed with some well-decayed manure; keep them growing, and stake them according to their requirements. Tropæolum canariense makes a fine pot or dwarf trellis plant for a cool conservatory, if sown in heat in March and potted on as required. The specimens of T. tricolorum that have done blooming may be turned out into a cool house or light shed; do not apply any more manure water to those still indoors, otherwise the ripening of the corms will be retarded. Plants of Veronica Andersoni that have been kept at rest for the past two months may now be shaken out, repotted, and the shoots shortened back a little. A few plants of Plumbago capensis should be pruned, potted, and kept in a little heat until they make fresh growths. Train Clematises to trellises or rafters; these form magnificent permanent climbers either for indoor or flower garden purposes. Fuchsias should be started into growth as occasion requires. They like a moist heat and the shoots should be pinched as they advance in growth. Coleuses must be kept near the light, potted as they require it, and pinched in order to maintain symmetry of growth. Prune, pot, and start Daturas into growth, and use the best ripened parts of their shoots for cuttings. Salvias make good indoor decorative plants, especially S. patens and S. splendens; therefore cut back the branches, pot, and start the plants into growth in moderate heat. French and fancy Pelargoniums should be kept as near the glass as possible, in order to induce a stubby growth and abundance of flowers; those required for early blooming should be subjected to an increased temperature, as should also the zonal ones.

Bedding Plants.—If Calceolarias wintered in frames have not been transplanted farther apart in fresh free compost, do so at once, and pinch off all flower-spikes and tall shoots, it being necessary to encourage a dwarf growth. Such as were propagated in boxes in heat this spring and are now well rooted should also be transferred to frames and set farther apart than they have been. Well rooted plants of Lobelias raised from cuttings, and seedlings that have been pricked off thinly into boxes, and which are now beginning to touch one another, should likewise be transplanted into a frame set on a hard bottom and into which 6 inches deep of light rich soil has been put. Ageratums, Tropæolums, Verbenas, Gazanias, &c., should be similarly treated, and care taken to protect them from frost at night. Pelargoniums should not be planted in this manner; on the contrary, they should be kept in pots in a cold frame; where two plants are growing in each pot, however, separate them and pot them singly, and keep them in a close frame for a short time afterwards. The variegated-leaved kinds, such as the bicolors and tricolors, should be kept in rather warm quarters. The propagation of these may yet be proceeded with, and the cuttings potted singly before their roots are more than an inch long, otherwise they might get broken. Dahlias may still be increased by means of division of the old roots or from cuttings; after they are well rooted, plant them amongst some rich free soil in a frame and protect them from frost. Keep Echeverias in cool houses or pits, or arrange the pots or boxes containing them on the floor of some cool Peach-house or Vinery. Those increased by means of the side shoots, leaves, or seeds this spring should be nursed carefully in a moderately warm place, so as to encourage a good growth before they are planted out. Echeverias or other succulents required for bedding should not be permitted to bloom indoors; indeed flowers at any time are only produced at the expense of the beauty of the foliage. The little yellow variegated Mesembryanthemum, now so common in our flower gardens, although tolerably hardy, thrives admirably in heat—a course that should be resorted to in order to have cuttings that will make good plants before bedding-out time. An ordinary greenhouse is, however, sufficient protection for it in winter and spring. Alternantheras are deservedly admired as carpeting plants. They should, therefore, be propagated for that purpose as expeditiously as possible, and the greener the foliage the more easily will the cuttings strike root. A. amœna has this year been rather sparing of young wood; it is, therefore, difficult to obtain a stock of it. Iresines and Coleuses, especially Verschaffeltii, should be propagated, potted singly, pinched, and kept near the glass in a warm frame or house. Perilla should be pricked out into boxes, and kept near the glass in any of the fruit-houses in which there is a little heat. In the case of Stocks, Asters, and Everlastings sown on gently-heated hotbeds or in boxes, the sashes should be tilted up a little night and day, and the seedlings shaded from strong sunshine. As soon as they are fit to handle, prick them out into other frames or into a well-sheltered south wall border, with a few Broom or Spruce branchlets stuck in front of them. French and African Marigolds and Tagetes signata pumila should be raised in heat, and, after they have come up, should be pricked off into boxes or pans, which should still be kept for a time in heat. Such hardy plants as have been wintered indoors should be transferred to the open ground at the earliest convenience.

Hardy Fruit Garden.—Wall trees must now be protected. Outdoor fruit trees as a rule promise to produce heavy crops. Plums are laden with flowers, and Cherries have set blossom buds in abundance; Pear trees, too, are most satisfactory. Finish grafting, more especially that of stone fruits, as speedily now as possible. If not already done, mulch between the rows of Strawberries with litter, the nutriment from which will be washed down to the roots by successive rains, leaving the surface clean for the fruit to rest on when ripening. See that Raspberry bushes are securely fastened to their supports; in most cases they are grown erect and tied to wooden stakes, but in others one-half of the rods from a stool is loosely plaited and brought to meet a similar number of canes from the next, thus forming a series of arches, whilst in other instances the rods are cut about 3 feet in length, and are tied together without a stake; in some other cases, too, they are tied to wires or trellises.

Kitchen Garden.—Cabbages and Cauliflowers have started actively into growth; the hoe must, therefore, be kept at work amongst them, as nothing is more productive of good to vegetables than a clean and frequently-stirred surface. Make a general sowing of Cauliflower, and prick off into a warm corner or border those sown last month, as soon as they are fit to handle; and in the event of cold or wet weather occurring, handlights, frame sashes, or hoops and mats may be employed for their protection. Sow some of the early kinds of Broccoli, and, in cold localities, also late sorts. Of the fine curled Italian Endive, sow some seeds in a brisk temperature for early use; but if not sown in a strong heat, the plants are apt to run prematurely to seed. The main crop of Beet may now be sown; but in warm counties towards the end of the month will be soon enough. It likes an open situation and trenched ground that has been manured for the previous crop. Thin Parsnips when they appear, but not finally; some growers prefer sowing early in this month, but even about London Parsnips are sown at the same time as the spring Onions, for they take a long time to germinate and they are not liable to "run." Sow Chicory thinly in rows, about 9 inches apart, for winter forcing. As soon as Globe Artichokes have made growths about 9 inches long, slip them all off except the three strongest, which should be retained for the summer's produce. The best of the slips should be chosen for a new plantation. Cut the heel attached to each smoothly, and then plant them 8 or 9 inches apart in clumps of three, each clump about 2 feet apart, in rows 4 feet asunder, in a deep rich sandy loam, and an open situation. Sow some summer Savoys in a warm border, and increase the stock of the winter kind either in the same way or by dividing the old roots. Fresh Tarragon plantations may be obtained by planting rooted slips from the sides of the old roots; Tansy may be increased by division of the roots, and Sorrel by sowing or dividing the roots; Balm, Burnet, Thyme, and Mint may be propagated by dividing the roots, and Hyssop, Fennel, Sage, Rosemary, Pennyroyal, and Lavender by slips, which if rooted are so much the better; while Chervil, Clary, Sorrel, Samphire, Purslane, and Borage require to be raised by means of seeds. Basil and Knotted Marjoram are best raised in a gently heated frame, and well hardened off before being finally transplanted. Preserve a piece of a warm border for French Beans, but it is rather too early to sow them yet. Before sowing open the drills in the morning, if fine, and sow the seeds in the afternoon. Sow Cardoons where they are to remain in lines 4 feet apart, so that three seeds may be in a clump 2 feet asunder in the row. In the northern counties, Gherkins may be sown in gently heated frames, but in warm and southern localities May is soon enough for sowing; whilst if a well-sheltered warm border be selected, they may be sown in lines 4 or 5 feet apart out-of-doors in the latter half of May, when they yield their crop at the end of July and in August. Keep up a succession of Peas and Beans, and attend to timely staking. Successional sowings of small salading must be regularly attended to and Lettuces transplanted, sown, and thinned. Sow Turnips as required, and in case of the coming summer being hot and dry, a small sowing of early white Vienna Kohl Rabi may be found useful, as it is of tolerably good flavour and withstands the drought of summer better than Turnips.

MARKET GARDENS.

The genial weather of the past fortnight has been instrumental in forwarding all sorts of vegetables. Winter Spinach is now pushing up strong fleshy leaves, therefore have the beds cleaned and hoed. Hoe and clean Parsley beds after the leaves have been picked for market, and, if not already done, sow some seeds for autumn and winter bearing; March, however, is the best month for this operation. During the last three weeks there has been plenty of Seakale obtained from the open fields, in which it is cut as soon as the tops are discerned making their way through the earthed-up soil. Finish the earthing-up of Asparagus ridges. Parsnips are now beginning to appear; therefore, where Lettuces are planted between the lines, they should have the earth about them loosened with a short hoe, and the alleys between, *i. e.*, where the Parsnips were sown, raked smoothly, but not deeply, with a foot-wide iron-toothed rake, so as to break the surface and to facilitate the egress of the seedlings through the soil. Earth-up Beans and draw the rake over the soil where they have not yet germinated. Beans are generally planted in rows 2½ feet apart, with a line of Cabbages between them, the latter being removed before the former require the space. Radishes will now grow quite freely without coverings of litter—*i.e.*, if the weather keeps fine and birds are kept off them. Therefore, remove such protections, which should be placed in the bottom of the manure heap to soak and rot. Still, however, keep litter on Rhubarb, for under it the leafstalks always come cleaner and crisper than when grown uncovered. Plum trees are in full flower, Pear trees are extremely promising, as are also Cherries; indeed, the fruit harvest, if uninjured by frosts and dry easterly winds, bids fair to be a good one. Grafting in general should now be proceeded with, whip-grafting being the mode generally employed. Stone fruit should be grafted first; Apple trees may remain until the last. Large trees or branches may be grafted just as easily as young trees; and young standards, when grafted, may be bent down so as to have the parts in union inserted in the soil, provided the weather is dry; but good claying and attention generally renders such treatment unnecessary. Mushroom spawn has been sadly destroyed this winter. Cucumbers should now be planted out in frames, and well covered at night with litter. Keep the frames close for some time after they have been planted out. Those who grow Melons should now plant them in the frames in which they are intended to be grown.

The following amusing case of continental red-tapeism is related in a foreign periodical:—A country apothecary, wishing to collect Digitalis in a wood which belonged to the State, made an application to the local authorities, offering to pay six francs (5s.) per annum for the privilege. The official to whom he applied forwarded the request to his inspector, who, in his turn, sent it to the conservator of the department, by whom it was transmitted to Paris, to the Director-General of Woods and Forests, who handed it over to the Minister of Finance. Having carefully studied the application, the Minister of Finance despatched it to the chief Director of State lands, who posted it to the departmental Director, instructing him to inquire into the justice of the applicant's petition. The latter, having satisfied himself on this point, sent back the papers with a favourable report to the chief Director, who then remitted them to the Minister of Finance through the medium of the Financial Secretary. The successful petition, with the required permission to gather the Digitalis duly attached, was now passed on to the Director-General of Woods and Forests, who sent it to the conservator, from whom it went to the inspector, and from him to the head woodranger. In the meantime, however, the applicant happened to die, and when the precious permission arrived, his successor could not avail himself of it that year, as the season for gathering the Digitalis had passed. We concur in the remark which our authority makes on the above—"*Se non e vero, e ben trovato.*"

SPRING FLOWERS.

The subjoined is a list of hardy plants, all of which are now in bloom out-of-doors in the Hale Farm Nurseries, Tottenham.

- Andromeda
  - polifolia
- Anemone
  - apennina
  - coronaria
  - nemorosa and vars.
  - stellata and vars
- Arabis of sorts
- Arisæma
  - præcox
- Arum
  - crinitum
- Aubrietias of sorts
- Bulbocodium
  - vernum
    - foliis striatis
- Caltha
  - palustris fl. pl.
  - radicans
- Cochlearia
  - officinalis
- Corydalis
  - bulbosa
    - rubra
  - cava albiflora
- Crocus
  - Aucheri
  - sulphureus
    - striatus
  - vernus
  - many garden varieties
- Cyclamen
  - Atkinsi
  - Coum
  - persicum
  - repandum
  - vernum
- Daisies, double-flowered
- Daphne
  - collina
  - Mezereum
- Dentaria
  - digitata
    - flore albo
- Dielytra
  - eximia
- Dodecatheon
  - Meadia
- Dondia
  - Epipactis
- Draba
  - aizoides
  - bœotica
  - borealis
  - glacialis
- Empetrum
  - nigrum
- Epimedium
  - macranthum
  - Musschianum
    - rubrum
  - pinnatum
    - elegans
- Equisetum
  - arvense
- Erodium
  - romanum
- Erythronium
  - americanum
  - Dens canis
    - albidum
    - album
    - purpureum
    - roseum
- Fritillaria
  - imperialis
  - Meleagris
  - præcox
  - pudica
- Fritillaria
  - pyrenaica
- Gagea
  - fistulosa
  - lutea
- Helleborus in var. (almost past).
- Hepaticas in var.
- Hyacinths in var.
- Iris
  - persica
  - tuberosa
- Laurustinus
- Muscari
  - botryoides
    - album
    - carneum
    - pallidum
  - cæruleum
  - comosum
    - atrocæruleum
    - monstrosum
  - Heldreichii
  - moschatum
  - neglectum
  - pallens
  - pulchellum
  - racemosum
    - majus
  - Stevensii
  - Strangwaysi
- Myosotis
  - sylvatica
- Narcissus
  - Ajax and vars.
  - calathinus
  - centifolius
  - Diomedes minor
- Narcissus
  - incomparabilis and vars.
  - odorus
  - poeticus and vars.
  - Polyanthus
  - Pseudo-Narcissus
    - minor
  - Tazetta
  - Telamonius
- Ornithogalum
  - Bergii
- Pansies in variety
- Polyanthuses in var.
- Potentilla
  - alba
- Primulas in var.
- Rhododendron
  - præcox
- Sanguinaria
  - canadensis
- Saxifraga
  - calyciflora
  - ciliata
- Scilla
  - amœna
  - bifolia
    - alba
    - rosea
    - rubra
  - Cupaniana
  - sibirica
- Scopolia carniolica
- Thalictrum
  - anemonoides
- Triteleia
  - uniflora

COVENT GARDEN MARKET.

April 10th.

Flowers.—Hyacinths and Tulips in pots are yet plentiful, and of the flowers of the former large supplies are being obtained from the open ground. Cytisus racemosus, Hoteia (Spiræa) japonica, spring-flowering Heaths, Fairy Roses, zonal and other Pelargoniums, Azaleas, Cyclamens (some of which are yet in fine condition), Ferns, &c., form the bulk of the pot plants. Cut flowers consist of Tea-scented and other Rose-buds, Gardenias, Camellias (principally white), blue Cinerarias, Pinks, and Carnations, Lily of the Valley, Orchids, and others. Besides these, there is a goodly quantity of hardy flower roots, such as Daisies in flower, Hepaticas, Pansies, Phloxes, Hollyhocks, Lupins, Carnations, Sweet Williams, Primroses, Polyanthuses, and several kinds of hardy climbers. There are also large Fern roots, conspicuous amongst which are those of the Royal Fern.

Prices of Fruits.—Apples, per half sieve, 3s. to 5s.; Cobs, per lb., 2s. to 2s. 6d.; Grapes, hothouse, per lb., 15s. to 30s.; Lemons, per 100, 6s. to 10s.; Oranges, per 100, 4s. to 10s.; Pears, kitchen, per doz., 1s. to 3s.; dessert, per doz., 6s. to 18s.; Pine-Apples, per lb., 6s. to 10s.; Strawberries, per oz., 6d. to 1s. 6d.; Walnuts, per bushel, 15s. to 30s.; ditto, per 100, 2s. to 2s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 5s. to 10s.; French, 10s. to 30s.; Beans, Kidney, per 100, 2s. to 3s.; Beet, Red, per doz., 1s. to 3s.; Broccoli, per bundle, 9d. to 1s. 6d.; Cabbage, per doz., 1s. to 1s. 6d.; Carrots, per bunch, 6d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 2s. 6d. to 4s.; Cucumbers, each, 6d. to 2s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 2d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 3s. to 6s.; pickling, per quart, 6d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 5s. to 8s.; Potatoes, per bushel, 4s. to 8s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Savoys, per doz., 2s. to 3s.; Scorzonera, per bundle, 1s.; Seakale, per basket, 1s. to 2s.; Shallots, per lb., 8d.; Spinach, per bushel, 3s. 6d. to 5s.; Turnips, per bunch 3d. to 6d.

ANSWERS TO CORRESPONDENTS.

Dracænas (W. F.)—Dracæna indivisa and Cordyline indivisa are the same thing.——Book on Hothouses (Gardener).—There is no good cheap book on the subject. Procure the illustrated catalogues of a few good firms.——Names of Plants (Homo).—Cupressus Lawsoniana; G. W.—1. Bryum cæspitosum. 2. Probably Polytrichum juniperinum, but there is not a rudiment of fructification, so this is only a guess. 3. A Hypnum, but in the absence of fruit it may be almost anything.——Peaches (Homo).—You may disbud those on walls as soon as the young shoots are large enough to handle.——Shading (W. W.).—You must have means of shading a little during bright days in summer.——Forming Herbarium (Under Gardener).—You will find a description of how to form an herbarium at p. 218 of the last volume of The Garden.——Cyclamens (S. H.).—Mr. Clark, market gardener, Twickenham.——Skeleton Leaves (Anxious).—Macerate the leaves in soft rain-water until all the soft or cellular portion is decomposed, when it can be removed with a very soft tooth-brush. Then place them in clean spring-water, to which a small quantity of chloride of lime has been added, in order to bleach them. Lastly, dry them between sheets of blotting paper, and leave them exposed for a short time to the sun and air.

THE GARDEN.

> "This is an art
> Which does mend nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

REMARKABLE STRAWBERRY CULTURE.

A visit to Mr. John Westcott's fruit garden at Topsom, Devon, on the 2nd inst., afforded me great pleasure, inasmuch as it enabled me to see cleanly and orderly cultivation carried out on about nine acres of market garden ground, partly devoted to healthy fruit trees that promise an abundant harvest. I was especially delighted with the skilful way in which Mr. Westcott cultivates Strawberries under glass, for during the many years I have been in practice I have never seen this delicious, wholesome, and delicate fruit brought to such perfection as it is here. In the houses, which are long, narrow, and low, and heated by means of hot-water pipes, are thousands of pots of Strawberries in various stages of growth, all cultivated in a masterly manner, Mr. Westcott having made Strawberry culture under glass a speciality for some years past. The pots which he uses are not large, nor are his plants overgrown or crowded with an over-luxuriant foliage. On the contrary, they are grown in what are called 48-sized pots, and some in small 32-sized ones. Thus managed, the plants are dwarf and sturdy, and are furnished with comparatively small foliage, set on very short footstalks. Their crowns are large, firm, and prominent, and previously to bursting get as large as a pigeon's egg. Thus prepared, when placed under glass they produce a host of sturdy flowering stems, each of which is, in due time, covered with plenty of flower-buds, that are induced to open strongly. It is really a grand sight to see a long house full of plants, whose flowers are thrust up above the foliage in such profusion. After the plants come into bloom, the next process is fertilising the flowers, in order that an even and heavy crop of fruit may be produced. This is a point in Strawberry culture under glass which requires particular attention. In all kinds of seasons, early or late, with the weather dark, cloudy, windy, foggy, and stormy for days; with snow, hail, and vapour, such as our climate invariably favours us with during the first three months of the year, many a persevering, practical, attentive man has failed, by some means or other, to set and swell-off a bountiful crop of fine fruit, even after a glowing prospect both as respects plants and blossoms; yet, during this critical and important stage in early Strawberry culture, Mr. Westcott is quite at home amongst his Strawberries, which are induced not only to blossom strongly, throwing their trusses of inflorescence straight up to the light, as boldly as if it were in the flowery month of May, but every bloom also gets quickly and well set. During the blooming time, the floors of the houses in the evening are as thickly strewed with fallen blossoms as the ground of a Cherry orchard, after a fine sunny and somewhat windy day. The fruit is at once set and begins to swell, without even a temporary halt. This season the plants have set a beautiful crop of fruit, which is swelling fast, and hanging in clusters around the pots as thickly as Hops, staking or propping being little practised here. The fruit, too, is fed, and swelled out in the greatest perfection. Indeed the way in which such heavy crops are swelled off and finished is quite marvellous. The colour is all that could possibly be desired, and the texture of the fruit is so firm that there is no difficulty in packing and transporting it safely to the London, Bath, Taunton, Exeter, and other markets. The varieties which Mr. Westcott cultivates at this season for his main crops are the Excelsior and the Claimant. It appears to me that Mr. Westcott pots his plants early, ripens them well, takes care of the plants in the autumn and early winter, gets them under glass early, allows them plenty of time to show their blossom; but that after they are in flower he gets them fertilised and set quickly, and that he allows no loss of time afterwards in swelling off and in perfecting the fruit—all good points in Strawberry forcing. James Barnes

TWO NEW WALL PLANTS.

Many seem to think that Ivy, Periwinkle, Jasmine, Honeysuckle, the Rose, the Bignonia, and others are amply sufficient for these purposes. Without for a moment disparaging these or such exquisite wall plants as Linaria Cymbalaria, common Wallflowers, and others, I beg to introduce two more, both suitable for clothing walls, and for half-concealing, half-revealing ruins and rock-work. One of these plants is for the inside, the other for out-of-doors. One is green as an emerald, the other blue as the bluest depth of an Italian sky. The majority of rocks, walls, and ruins, when dry, are of a white or red hue. What can there be more artistic than clothing them with blue drapery, an operation at once simple and easy? A few seeds of Myosotis dissitiflora had probably been carried by wind or birds and dropped on a rough stone wall with which I am acquainted. They grew; and now these compact cushions of tufted beauty are the delight of all eyes. They had no care, no attention; were, in fact, unseen until their flowers burst forth from the hard bosom of the stones and draped them with surpassing loveliness, a result too charming to keep to oneself. I have already done what I could to spread this loveliest of all spring plants widely over the surface of our gardens. I now entreat your readers to let it climb, and beautify their walls. Then, again, how beautiful this Forget-me-Not is among other plants, such as the Golden Feather, pincushioning the hardest rocks with patches of brightest yellow; or among Wallflowers, or against Golden or Silver Ivy, what could be more lovely than large flecks of blue? My other plant is a humble Grass or Rush, viz., the Isolepis gracilis. It is almost, if not quite, hardy. But if you want fully to develop the elegance of its slender beauty, grow it in a stove temperature. The long rushes or leaves then double their usual length and delicacy, so much so that they cannot support themselves, but droop and fall in the form of elegant spray. Pot plants of Isolepis are charming; for tiny baskets it is admirable, and on brackets it is perfect; but on a wall, faced with rockwork or virgin cork, it is most exquisite. Hardness, straightness, formality, even the existence of a wall itself, are all lost amid the refreshing greenness of this charming Rush. On a damp wall the smallest modicum of soil suffices for its growth! The white roots cling to the stones and drink in moisture from every chink and cranny, and the tops delight, as I have said, in the moist atmosphere of a stove or Orchid-house. Beautiful by itself, it is, if possible, still more lovely when intermixed with two of the most delicate of the Maiden-hair Ferns, viz., Adiantum Capillus Veneris (which, though scarcely hardy, thrives well on a stove wall) and A. æthiopicum. Most of the others, such as A. formosum, are too strong to harmonise well with the extreme delicacy and beauty of this little Grass-like Rush when grown in a high temperature; and this plant, grown in this way, is as useful as it is beautiful. Plants of it are also equally well suited for clothing conservatory walls, or for the back walls of corridors and passages; though in a low temperature they are not so exquisitely delicate as in a warm one. Portable temporary screens for drawing, sitting, or dining-room uses, might readily be formed of Isolepis and Ferns, or centre-pieces for the dining room; for the latter what, indeed, could exceed in freshness the slender Isolepis, floating on a crystal fountain, with a few silver cups of Eucharis resting upon or amongst it? For a small vase, too, what can match, in grace, a drooping veil of its slender foliage? And for clothing a wall in company with the Ferns I have named, the whole lit up here and there with an outjutting stone and patches of variegated Lycopodiums, the Isolepis has no equal. F.

On Monday last we visited the Victoria Park at Bath, the site of the forthcoming exhibition of the Royal Horticultural Society, and a more desirable position for a great show could hardly be desired. The park is well laid out and varied in surface, and contains an excellent selection of trees and shrubs very well named. The great show will take place on a large open lawn in the centre of the park. The large tent is already far advanced, the banks being turfed. A fine drive and roomy footways go all round the park towards its outer portion, making the ground altogether as convenient as it is beautiful.

NOTES OF THE WEEK.

—— The first volume of M. André Leroy's noble work on Apples has just been published. The second volume, completing the work, is to appear in July.

—— We learn that Mr. Robert Warner has been appointed by the Council of the Royal Horticultural Society to represent English horticulture at the forthcoming International Exhibition at Vienna.

—— The beautiful and rare large Dog's Tooth Violet (Erythronium giganteum) is now in flower in Mr. Barr's collection. All lovers of hardy plants will welcome one so handsome both in leaf and flower.

—— Probably the finest collection of Daffodils ever brought together is now to be seen at Mr. Barr's experimental grounds at Tooting. They are classified in such a manner as to make their study comparatively easy. In Mr. Parker's nursery at the same place there are also fine displays of hardy plants and spring flowers.

—— Perhaps the finest flowered plant of Odontoglossum Hallii ever seen is now in bloom in Messrs. Veitch's nurseries at Chelsea. The plant is large and vigorous, and has seven flower-spikes, one of which has no fewer than twenty flowers upon it, all large and perfectly developed.

—— Of Arpophyllum giganteum an exceedingly fine specimen is now in bloom in the gardens of Lord Londesborough at Norbiton, Surrey. It has ten large well-developed flower spikes, around which the beautiful little rosy-purple shell-like blossoms are arranged with the greatest possible symmetry and beauty. This may be regarded as one of the best-bloomed plants in the country.

—— At the meeting of the Royal Horticultural Society, held on Wednesday last, a very useful flower-pot was shown by Mr. Matthews, of Weston-super-Mare. It was a pot of ordinary form, perforated around the rim, each perforation being about an inch and a half apart. By means of these perforations dwarf plants may be tied down to the rims of the pots in which they grow without the aid of stakes, thus at once securing neatness and freedom from injury sometimes inflicted on the roots by the use of stakes. A Pelargonium planted in one of these pots, and tied to the rim, was submitted for inspection, and clearly illustrated the advantages which these pots possess over those of the ordinary make.

—— Mr. McNab recently made some remarks before the Botanical Society of Edinburgh, on the spiral Rush known as Juncus effusus var. spiralis. He said that during the meeting of the British Association —held at Edinburgh in 1871, the attention of some of the members was directed to this peculiar plant, which was originally found in the North of Ireland by the late David Bishop, while curator of the Belfast Botanic Garden. As far as he could recollect, only one plant of it was discovered, and it had been propagated ever since by division of the roots. On that occasion he was asked if the spiral form could be reproduced from seed, but he was then unable to answer the question. Although good seed was very sparingly produced he had some collected and sown, and he could now affirm that it could be thus produced, as all the seedlings raised were more or less spiral.

—— There is a report current that Her Majesty and the Court have decided not to countenance what has taken place at South Kensington with reference to the Royal Horticultural Society, or to recognise the new council, until they have finally come to terms with the Exhibition Commissioners. It is said that a compromise is being negotiated, the effect of which, if it is successful, will be that while visitors to the Exhibition will have free access to the gardens on all ordinary occasions, admission to them on "show days" shall be only by payment of such sum as the society may think is calculated to keep the attendance select. Collaterally with this arrangement there will be modifications in the propositions of the Commissioners as regards the number of tickets of admission to the Exhibition to which the Fellows will be entitled, and also respecting the financial relations of the two bodies. Sir A. Slade has been provisionally appointed treasurer.

—— We extract the following account from the pages of a foreign journal, without, however, pretending to indorse its historical accuracy. "Clianthus puniceus, which now grows in great abundance in New Zealand, is said to be not a native of that country, but to have been originally introduced in the following manner. Many years ago a French ship, which touched at one of the islands, was seized by the natives, the crew massacred, and the cargo pillaged. Some boxes, which were brought ashore on a small island in the Kiri-Kiri River, when opened, were found to contain nothing but seeds. In their disappointment the plunderers scattered these about in all directions, and in a few years afterwards the whole islet was covered with the bright-red flowers of Clianthus puniceus. The natives, charmed with the colour, at once appropriated the flowers for purposes of personal decoration; and so popular did they become, that plants were conveyed to various parts of the mainland and carefully replanted, with a view to a more convenient and constant supply. Thus, in process of time, Clianthus puniceus became so widely distributed in New Zealand that it now presents all the appearance of being indigenous."

—— We are informed that the Royal Horticultural Society's show of Chrysanthemums will be held on November 12th and 13th, instead of, as has been announced, on the 5th and 6th of that month.

—— On Good Friday, notwithstanding the coldness of the weather, about 15,000 people visited Kew Gardens, and upwards of 35,000 paid them a visit on Easter Monday.

—— Mr. Bohn informs us that he has a plant of Magnolia conspicua in his garden at Twickenham which has at present over 2,000 flowers on it. It is about 18 feet in height, and 12 feet in diameter, and is the admiration of all who see it.

—— We understand that a premium of 200 guineas is offered for the best design for laying out the Roundhay estate, Leeds; that 100 guineas are offered for the second best design, and that 50 guineas are offered for the third best. Part of the estate is to be laid out as a public park, and the remainder as sites for villa residences. Applications are to be made to Mr. Curwood, Town Hall, Leeds.

—— French Asparagus from the open ground has now arrived in Covent Garden market. Its stalks, as a rule, are about an inch in diameter, and some of them measure even more than that. Our home-grown forced Asparagus has been excellent this season, but as yet we have seen no Asparagus at all comparable with that from France.

—— The finest Apple at present in Covent Garden market is the French Calville Blanc, which is of large size, and of a beautiful yellow colour, the specimens of it which we examined being in as good a state of preservation as when they were removed from the tree. The fact that they realise from twenty shillings to thirty shillings per dozen, testifies to their quality.

—— The Manley Hall Orchids were sold the other day by Messrs. Capes & Dunn, and realised large prices, of which the following are a few of the more remarkable:—

	£	s.	d.
Aërides affine superbum ...	18	7	6
,, Dayanum	16	16	0
,, Fieldingi	19	19	0
,, nobile	11	11	0
,, Schröderii	24	3	0
,, Veitchii	24	3	0
,, Williamsii	11	11	0
Angræcum sesquipedale (good var).	16	16	0
Anguloa Clowesii	16	16	0
Cattleya exoniensis	27	6	0
,, labiata	15	4	6
,, Mendelii	35	14	0
,, Pinelli grandiflora	10	10	0
Cœlogyne cristata	16	0	0
Cymbidium eburneum ...	59	17	0
,, Mastersii	12	12	0
Cypripedium Dayanum ...	17	0	0
,, hirsutissimum...	12	12	0
,, lævigatum ...	10	16	6
,, Stonei	36	0	0
Dendrobium crassinode ...	13	13	0
,, Devonianum ...	12	12	0
,, Hookerianum (chrysotis) ...	12	0	0
,, McCarthiæ ...	12	0	0
,, Schröderii ...	13	13	0
,, Wardianum ...	29	2	0
Epidendrum prismatocarpum	27	0	0
,, vitellinum majus	11	3	6
Lælia anceps Dawsoni... ...	10	10	0
,, cinnabarina	17	17	0
,, elegans	13	13	0
,, purpurata	29	2	0
Lycaste Skinneri alba ...	16	0	0
Masdevallia Lindeni	39	0	0
,, tovarensis ...	14	0	0
Miltonia cuneata	13	2	6
,, Morelliana	12	12	0
Odontoglossum nævium majus	16	5	6
,, Phalænopsis...	12	0	0
Oncidium concolor (rare) ...	18	18	0
,, splendidum	43	0	0
Phajus Bensoniæ	12	12	0
Phalænopsis Luddemanniana	12	1	6
Pleione lagenaria	10	10	0
Saccolabium ampullaceum ...	22	0	0
,, Blumei majus ...	10	10	0
,, guttatum superbum	46	0	0
Sophronitis grandiflora ...	13	13	0
Vanda insignis (true)	14	14	0
,, Lowii	17	17	0
,, teres	20	0	0

The magnificent specimen of Cocos Weddelliana figured in our columns a short time ago, was bought by Mr. Wm. Cole, for £60, a smaller plant fetching 42 guineas, while a splendid specimen of Geonoma Seemanni realised 31 guineas, and a plant of the rare and beautiful Nepenthes sanguinea fetched £50.

—— We regret to announce the death of Mr. Charles J. Perry, of The Cedars, Castle Bromwich, Birmingham, which took place on Good Friday, at the early age of fifty years. Mr. Perry commenced his floricultural career when only fifteen, and for more than thirty years has been a prominent exhibitor. His attention was first called to the Dahlia, of which he raised many first-class seedlings. Subsequently he engaged, with no less zeal and success, in the cultivation of the Verbena, many of the best varieties of which owe their existence to his practised skill and judgment. As a Rose grower he stood deservedly high, and was for many years a judge at our great metropolitan Rose shows. He was also a leading member of the Handsworth Floral and Horticultural Society, filling the office of honorary secretary from the establishment to the dissolution of that body. By a large circle of acquaintances he was respected for his kind and genial disposition, while his sterling qualities inspired all who enjoyed his intimacy with feelings of the warmest regard. He was buried on Thursday last in the churchyard of Castle Bromwich.

THE FLOWER GARDEN.

THE PASQUE FLOWER.

Now—when the Pasque flower is pushing its purple blossoms up through the wind-beaten Grass, and when our gardens are brilliant with the beauty of the more common Anemones—is a seasonable time to call attention to the beauty of this lovely species. Though sparsely distributed in Britain, this fine old border plant is a true native, and when it does occur on a bleak chalk down, it is generally freely dotted over the turf. The position is usually such as to suggest the aptness of the name Windflower for the family generally; and there are few sights more interesting to the lover of spring flowers than to see its purple blooms just showing through the hard Grass of the blast-swept down on an early spring day. The plant is much smaller in a wild than in a cultivated state, usually devoting itself to the production of a solitary flower, which, while showing through the Grass, seems careful not to rise above it. In the garden it forms rich healthy tufts, and flowers more abundantly and vigorously, the contrasts between the wild and cultivated states of the plant being very marked. There are several varieties, including red, lilac, and white kinds, but these are now rare. There is also a double variety. It prefers well-drained and light but deep soil. It is well suited for borders and also for the rock-garden.

The Pasque Flower (Anemone Pulsatilla).

THE HYDRANGEA.

Apart from its interest as a pot plant, the Hydrangea has considerable claims upon our attention as a shrubbery border plant, and seen, as we sometimes find it, in favourable spots upon the sea-coast, it is certainly one of our most effective deciduous shrubs. In Devonshire and Cornwall, South Wales, more especially near Swansea, North Wales, Anglesey, and some other districts, we have frequently met with specimens of the Hydrangea growing in the open ground, huge bushes 6 and 8 feet in height, and quite as much in diameter, each producing scores, perhaps hundreds, of trusses of its gorgeous flowers, sometimes pink, and in other cases a soft cœrulean blue. Where, indeed, a soil is strongly impregnated with iron, whether it be loam, peat, or sand, you may almost make sure of blue flowers being produced. The Hydrangea is a plant which, to grow it to perfection, does not need a compost, that is, there is nothing gained, but rather the contrary, by compounding a soil for it. I have spoken of loam, peat, and sand; the two former of these will suit the plant perfectly in the simple form, and, indeed, much better than when mixed together. For choice, however, I prefer a nice mellow loam, not too light, and in that, with occasional waterings of liquid manure, the plant will grow in the most perfect manner. The fashionable soil, especially for producing blue flowers, when I practised near London, was the Norwood loam. That was rather strong, and parts of it full of red streaks of iron rust, but when broken down and exposed to the weather, for a few weeks it formed a fine potting soil, and one in which the plant delighted.

The Hydrangea may be very readily propagated by cuttings, and those which are taken from near the base form the best plants. My own rule used to be to put the first batch of plants into the forcing-house about Christmas time, and those, if the temperature was growing, gave some nice cuttings before the end of January. These were taken off when not exceeding an inch in length, and were put in propagating pots in the usual manner, the only precaution taken being to surround the base of the cutting with some sharp sand. The temperature of a Cucumber frame is the most suitable for striking this plant, always observing the good old rule never to allow the cuttings to droop until the roots are formed. Directly the cuttings are nicely rooted pot them off, using the soil you intend to continue; put them into small pots first, and when those are full of roots remove them to the size in which it is intended that the plant shall bloom. A few of the strongest may require 6-inch pots, but as a general rule the 4-inch size will be found sufficiently large for the first season. The temperature for the plants must be brisk, moist, and growing, and care should be taken that the plants be kept near the glass, so that they may make thick, sturdy, healthy growth, the stem not being more than a few inches in height, and each leaf nearly as large as your hand. Ripen such a growth thoroughly, get the leading bud nearly as large as the end of your thumb by the time the leaves begin to fall in the autumn, and then you may make sure of a grand panicle of flowers the following season. To effect this kind of growth a frame or pit is most desirable, especially in the early part of the season, and where that cannot be secured put the plants upon a shelf near the glass, and as they are greedy feeders, place each pot in a feeding saucer so that water may be put in if necessary. When the growth is made, gradually inure the plants to the open air, so that by the end of May they may be set under a south wall to get thoroughly matured, and then be removed to a more shady situation to pass the season of rest. Keep the plants comparatively dry when the leaves begin to ripen and fall off, but do not attempt to force a premature ripening by withholding water before the plants give indication that the season of maturation has arrived. The best place to winter the plants will be a dry airy shelf, and but very little water will be necessary. This completes the first season's management. In the second year, if flowers are wanted early, say in April or May, forcing must commence at the end of December, and be continued in the temperature of the early vinery until the flowers begin to show colour, when the plants may be removed to a cooler atmosphere. There is no advantage in potting the plants before they bloom, as they seldom make root in the fresh soil; but each pot may have a feeder containing water placed under it, which may be kept filled during the sunny hours of the day, but at night they will be better empty. When the plants break, reduce the side shoots to three or four of the best placed upon each plant, which may be grown on for future blooming, and the others may be used as cuttings. If particularly large individual flowers are required, thin out, directly they are fully recognisable, half the buds upon each truss, of course choosing the weakest and worst placed. The truss of a well-grown Hydrangea should be at the least a foot or more in diameter, and each flower should be nearly as large as a five-shilling piece. Thus grown, the Hydrangea, whether blue or pink, is a very imposing object, and will remain in perfection in the conservatory for two months. Directly the bloom becomes faded, cut the branch away to the secondary shoots, which are to form the blooming shoots for the following season. These must receive all the encouragement that can be given them, and for that purpose it will be necessary to shift the strongest plants into eight-inch pots, and the others into pots one size smaller. Use the same kind of soil, and, at the time of shifting, remove the crocks, and at the same time, with a pointed stick, loosen the matted roots around the ball, so as to induce them to root into the fresh soil. Of course, after this shifting, the plants will require to be kept close and shaded until they make fresh roots, and then they must receive just the same encouragement they did in the first season. These plants, if properly grown and ripened, will, in the following season, produce three to four fine handsome trusses each, and then form very handsome subjects for vases. If it is desired to grow the plants a third year, the same process as to disbudding must be followed, and then a dozen shoots to each plant may be encouraged. I generally, after the second season's blooming, put the plants in the open ground, mixing them in the borders with the American plants, where in August and September they form very effective objects.

For early beds, in the dressed flower garden, the Hydrangea is very desirable. Plants started in January come into flower in April, and form very nice groups through May and June. For single specimens upon the lawn, in places where the wood ripens properly, the Hydrangea forms a very fine object; where it does not ripen, large specimens should be grown in pots or boxes, and be set out upon the terraces in the summer season. They form capital companion plants to the scarlet Pelargoniums. When grown in permanent beds, the soil should be porous and well drained, and should be raised considerably above the general level of the surrounding soil, Hydrangea hortensis and its variety, with the variegated foliage, are the kinds most generally grown, the latter, especially, for its foliage. A few plants of H. japonica may also be cultivated, but they are not so effective as the older species. Those who require blue flowers speedily may crush some alum into fine powder and put a pinch occasionally upon the surface of the soil. This will give blue flowers, but it will be at the expense of the health of the plant, which must be thrown away when it has done blooming. W. A.

NEW, RARE, OR NEGLECTED ALPINE PLANTS.

(*Continued from p.* 278.)

Æthionema grandiflorum.—This is of larger and more sturdy habit than *Æ. saxatile*, less spreading and prostrate in habit, less glaucous in tone, and with much larger flowers of a purplish rose colour, in elongated spikes. It is a valuable plant for the rock-garden, thriving freely in sandy loam, and exceedingly well suited for margins and slightly-elevated rocky banks. As a border plant, it will also thrive where the soil is free and well drained. Being somewhat impatient of transplantation, it is desirable to allow some plants to ripen seed on sunny edges or borders. Seedlings in pots will, of course, transplant easily. It deserves a place in every collection of alpine and herbaceous plants.

Androsace glacialis.—A rather rare and beautiful species, from Switzerland, growing in compact sheets, about 2 inches high, and bearing bright pink, or purplish rose-coloured, solitary flowers with a yellow throat and tube. The leaves are small, tongue-shaped, closely crowded, and forming small rosettes at the ends of the slender, red-tinged stems. Same treatment and positions as for *A. pubescens.*

Aquilegia leptoceras lutea (Yellow Long-spurred Columbine).—A new species from North America, and one of the finest perennials ever introduced. It grows in dense tufts, and produces a great abundance of large, golden-yellow, long-spurred flowers in a long succession of bloom, which commences in June. The flowers are much larger than those of *A. cœrulea*, and have long, straight horns or spurs. This species is not to be confounded with *A. aurea* of Roetzl, of which the flower is hardly half the size, and of a sulphur-yellow, shaded with green. Same culture and positions as for *A. cœrulea.*

Aquilegia pyrenaica (Pyrenean Columbine).—A very dwarf species from the Pyrenees, 6 to 9 inches high, allied to *A. alpina*, but smaller in all its parts. It flowers early in summer, producing from 1 to 3 small blue flowers on each of the almost leafless stems. The leaves at the base are 1-or 2-ternate, with linear segments. It is a very suitable subject for rock-work, the margin of the mixed border, or for cultivation in pots, in moist sandy loam.

Aster Reevesi (Reeves's Aster).—A very charming dwarf Aster, with slender branching stems 9 to 12 inches high, and very small, linear, acute, Heath-like leaves. It flowers in autumn, producing a great abundance of small white yellow-centred blossoms in a dense pyramidal panicle. Well suited for rock-work or borders, in ordinary soil. N. America.

Astragalus vaginatus (Sheathed Astragalus).—A handsome species with erect pubescent stems, about one foot high. Flowers in summer, of a rosy-purple colour, with white-tipped wings, large (each flower about an inch long), and arranged in dense spikes on stalks longer than the leaves. The leaflets, which are usually in seven or eight pairs, with an odd one, are of an elongated-oblong shape, and covered on both sides with short, silvery, adpressed hairs. A native of Siberia and N. America, and a good plant for either rock-work or borders, in sandy loam.

Astragalus alpinus (Alpine Astragalus).—This plant, which is considered by some to be a variety of *A. Onobrychis* is a native of various parts of northern Europe and Siberia, and occasionally, though rarely, found in Britain. It is a prostrate hairy herb, with branching stems varying from a few inches to a foot in length, and producing, in summer, short racemes of bluish-purple (sometimes whitish), drooping flowers. The leaves consist of from eight to twelve pairs of ovate or oblong leaflets, with an odd one. Same positions and culture as for *A. Onobrychis.*

Bryanthus Breweri.—A handsome dwarf shrub of compact habit, nearly a foot high, from the lofty sierras of California. The rigid ascending stem and branches are thickly covered with smooth linear leaves about half an inch long, and narrowly revolute at the margin. The flowers are half an inch across, cleft to, or rather beyond, the middle, of a bright rose-violet or red-purple colour, the upper part of the petals being of a darker shade. The beauty of the flowers is enhanced by the great length of their ten light-coloured stamens, tipped with violet anthers. The inflorescence is at first in dense roundish clusters at the ends of the erect branches, becoming corymbose as the flowering advances. This is a valuable addition to the rock-work or choice border, and should be planted in sandy peat soil.

Campanula Raineri (Rainer's Campanula).—An exceedingly dwarf, pretty, and rare species from the mountains of Styria and Carinthia. It blooms early in summer, producing erect, light purplish-blue, funnel-shaped flowers, over an inch across, on stems 1 to 2 inches high, each stem bearing from one to three flowers, and issuing from a rosette of small, roundish, hairy leaves. This is one of the most interesting Campanulas in cultivation, and admirably suited for warm ledges of rock-work, or the margin of the choice mixed border, where its creeping roots will spread rapidly in fine sandy soil.

Campanula Wanneri (Wanner's Campanula).—A distinct and handsome species, 6 to 10 inches high, with drooping, dark-blue, tubular, bell-shaped flowers, each 1½ inch long, appearing in May on long one-flowered axillary and terminal peduncles. Leaves lance-shaped, unequally toothed, the lower ones decurrent on long leaf-stalks. A native of Transylvania and the Banat Alps. At present it is rather scarce, and until more plentiful should be confined to the rock-work; but it will probably prove an excellent border plant. Ordinary free or sandy soil.

Crocus Imperati (Imperati's Crocus).—A very early spring-blooming species, nearly allied to *C. versicolor*, but much handsomer, 3 to 6 inches high. The flowers are sweet-scented, of a lilac-purple on the inside, while the outside is of a creamy-white, marked with three longitudinal dark-purple lines, of which the two outer ones and the end of the middle one are curiously feathered or fringed with short lines of the same colour. This very charming Crocus was found on the mountains of Calabria, in Southern Italy, at an altitude of from 3,000 to 6,000 feet.

We may here mention also another fine species of recent introduction from the mountains of Greece, viz., Crocus Aucheri, a dwarf, very early spring-flowering species, with deep orange-yellow flowers. (Syn. *C. chrysanthus*).

Crocus Boryanus (White Autumn Crocus).—A very pretty autumn-flowering kind, from Asia Minor, the Morea, and the Greek Islands. The flowers, which do not appear until late in autumn, are of a creamy-white, with an orange-yellow throat, the base of the segments sometimes marked externally with dull purple lines. This species, which is as yet rare in gardens, is a very pleasing addition to the list of our autumn-flowering plants.

Cyananthus lobatus (Lobed-leaved Cyananthus).—A brilliant and remarkable Himalayan rock-plant, spreading loosely about, with prostrate habit and procumbent or ascending stems about 4 inches high. The flowers, which appear in August and September, are purplish-blue, with a whitish centre, solitary, usually terminal, about an inch across, funnel-shaped, with five spoon-shaped lobes, and are finely fringed on the throat with numerous long, soft, whitish hairs. The leaves are lozenge-shaped, small, fleshy, alternate, deeply and irregularly lobed, greyish underneath. The best position for this plant is on a sunny ledge of rock-work, where its overhanging flower-laden stems will produce a fine effect. It grows best in a mixture of sandy peat and leaf-mould, with plenty of moisture during the growing season. It is easily and freely increased by cuttings. The seed requires a dry favourable season to ripen it; in wet weather the large, erect, persistent calyx becomes filled with water, which remains and rots the included seed-vessel.

Cypripedium guttatum (Spotted Lady's Slipper).—A very charming Siberian species, which has been described as "one of the most beautiful of vegetable productions," although at present seldom seen in gardens. It grows from 6 to 9 inches high, and flowers in June, producing solitary, rather small but beautiful snow-white flowers, heavily blotched or marbled with deep rosy-purple. The flower-stem rises from a single pair of broadly-ovate downy leaves. It requires a shady position on the rock-work or mixed border, in leaf-mould, moss, and sand, and should be kept rather dry in winter.

Daphne rupestris (Rock Daphne).—A neat and diminutive shrub with shining and fleshy spoon-shaped leaves, from a third to one-half an inch long, channeled above, and with a conspicuous and large blunt keel below, the spaces between the keel and margins being of a greyish tone. Flowers somewhat like those of *Daphne indica*, and very sweet-scented, appearing in early spring. New Zealand. (Syn. *Gaultheria rupestris*).

Draba glacialis (Glacier Draba).—A very dwarf species, forming dense little cushions 1 to 2 inches high, which in April are covered with bright golden-yellow flowers. Leaves linear, smooth, ciliated, forming small rosettes closely packed in pincushion-like masses. The plant very much resembles a small specimen of *D. aizoides*, and is considered by Koch to be merely a variety of that species, growing at a higher elevation; but it differs from it by having a few-flowered stem, pedicels shorter than the pod, and a short style. It is found on the granitic Alps of Switzerland, and is suited for exposed spots in the rock-garden, in moist and very gritty or sandy soil, and associated with the dwarfest alpine plants.

(*To be continued.*)

LILIES.

These noble plants share the fate of a great many valuable hardy subjects, inasmuch as they are rarely so placed that their beauty may be fully seen, or so planted that they may be developed in all their vigour. Not unfrequently hardy species are grown in pots, and suffer annual repotting, and it may be annual drying, than which nothing can be more injurious to them. The annual tearing up of the roots consequent on repotting Lilies is also exceedingly injurious, and the plants subjected to it rarely make a first-rate growth. Then, again, in borders they are frequently planted where any but the common kinds have little chance of thriving; for it should be generally known that some of the very finest Lilies, as L. superbum of North America, only succeed perfectly in peat soil; hence we frequently see this and other species in such a starved state, never yielding a bloom, that the owner asks himself how such a poor object ever came to earn such a fine name. Now, among the various ways of growing and enjoying Lilies, there is one practicable by almost every owner of a garden, and which leads directly to the best results both from a cultural and æsthetic point of view. The culture of Rhododendrons has for so many years been so popular in this country that there are few places that do not possess beds or masses of them, or in which fertile masses of peaty soil have not been gathered for their reception. The Rhododendron bush, however fine in flower, has at all times a flattish, formal outline, and this is often disagreeably apparent where large masses are planted, as is now the custom in many places. The soil suited to the Rhododendron is also perfectly suited to the Lily race. The bold and tall heads of Lilies standing above the flat green of the Rhododendrons in summer, sometimes, as in L. tigrinum Fortunei and L. superbum, in magnificent candelabra-like heads, are the very things to relieve these masses in the most effective way. Then, again, the Lilies themselves will be seen to much greater advantage; the bases of their stems being hidden by their surroundings when withering will not be an eyesore, as they often are when in a border, so that an impatient gardener might want to cut them down before their time, or have something else in their place. The conclusion is plain enough. There is no better plan with Lilies than dotting them here and there through the Rhododendron beds, and leaving them there undisturbed from year to year. Here, untortured by the repotting process, and their scaly and therefore easily dried roots not exposed to drought at any time, they would spread into vigorous tufts that would be magnificent when in bloom. It would not be desirable to dot them all over the beds; a distinct species here and there is what is required. When kinds are rare, a single root will suffice to begin with; it will soon increase in the congenial soil. The very open spaces which long remain between Rhododendrons, &c., in consequence of their somewhat compact and slow-growing habit, encourage the kind of arrangement suggested. Dwarf kinds, like L. longiflorum, should of course not be placed among the Rhododendrons, but on the fringes of the beds and clumps. It would be desirable to treat other fine bulbs in this way as well as the Lilies, as, for instance, the Gladioli, Sparaxis pulcherrima, Tritomas, Tritonia aurea, &c., none of which need be disturbed after being planted. Another advantage of this mode is the succession of bloom from the same surface. As a rule, once the blush of early summer bloom has passed from the American plants, they present an uninviting surface for the season afterwards; whereas varied in the way described, the beds would be most attractive at other seasons.

Hepaticas.—How is it that these are so seldom found in gardens, seeing that they rank among the best of spring flowers? Now-a-days they seem almost wholly confined to cottage gardens, where now and then a good bunch or two of the old double red may be found, and occasionally a plant or two of the single blue. I find all the varieties I have to be equally hardy, and to do equally well if grown in a good deep loam, as the roots go straight down into it in search of food and moisture. Hepaticas are rather impatient of removal, an operation which, although at times absolutely necessary for purposes of propagation, should be performed as seldom as possible. I am growing now seven distinct kinds, namely, double and single red, double and single dark blue, single light blue, single white, and a kind called H. angulosa, the light blue flowers of which are single and larger than those of the old light blue sort, and the leaves are also larger and more rounded than in other kinds. As Hepaticas all flower at the same time, a pleasing mode of arranging them in borders is to plant them in triangles of three colours.—A. D.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Viola odorata cærulea.—This desirable variety, of which I send you some flowers, I found in a Derbyshire lane. It is desirable from its bluer colour than that of the ordinary kind.—H. Harpur Crewe.

Large-flowered Single Larkspur.—Is there such a thing in the wide world as Delphinium grandiflorum, *single?* If so, has any one seen it, or doe any one possess it? Or are we to suppose that the dense double flower, known as "D. grandiflorum plenum," is the originally wild form of Siberia? If it be the wild type, is any parallel case on record?—Nameless.

The Polyanthus from Seed.—In The Garden (p. 256), "R. D." has an article on the Polyanthus, and speaks of the seedlings not flowering until the second year; in this I think he is wrong. In the year 1871 I bought a packet of seed from Messrs. Sutton; it was sown in August, and last year the seedlings flowered, and proved to be a fine strain of gold laced Polyanthus. As soon as their seed was ripe it was sown in shallow pans in a cool frame; when the plants from it were large enough to handle they were put into separate pots, and last week my gardener put out 14 dozen seedling Polyanthus all showing spikes of flower.—H. M. I., *Coventry*.

Roses for Button-Holes.—Will you kindly give me a few names of Roses suitable for forcing for button-holes, and oblige Queen of Flowers. [The sorts best suited for button-holes are those of which the back of the petals is clear in colour as well as the upper surface. The best, according to Mr. George Paul, are: H. P.: Abel Grand, Beauty of Waltham, Duke of Edinburgh, Duke of Wellington, Fisher Holmes, General Jacqueminot, Henri Ledechaux, Jules Margottin, Louisa Wood, Madame Victor Verdier, Virginale, Monsieur Noman, Princess Mary of Cambridge, Vicomte Vigier, Victor Verdier. Bourbon: Souvenir de la Malmaison. Tea: Abricote, Alba rosea, Catherine Murnet, Devoniensis, Goubault, Isabella Sprunt, La Nantes, Madame Falcot, do. Charles, Nauvin, Safranot.]

ANCIENT EMPLOYMENT OF FLOWERS.

(*Concluded from page* 286.)

The employment of evergreen boughs for the ancient altars is mentioned in many places in classical literature, and cannot but recall the strewing of the "branches of Palms" upon an occasion in Jerusalem when the symbol of honour and glory was eminently appropriate. Nothing more or less than memorials of these ancient practices are our own current ones, destined probably to endure for ever, of decorating places of worship at Christmas-time with Holly, and Laurel, and Fir; and again at Easter and Whitsuntide with flowers; though with Christians there is involved in the former custom the additional and enriching idea of Life triumphing over death, or, what comes to the same thing, the victory achieved in Palestine over evil and sin; old England's indomitable Holly in particular, laughing, as it were, to scorn, the cold, the snow, and the frost. The various evergreens employed by the ancients for sacred purposes went by the collective name of Verbena, the parent form of our English "vervain," the appellation of Verbena officinalis, given to the wayside weed, resting upon some vague belief that it was one of the plants used in the temples. How curious that by the middle of the nineteenth century, a name once of significance so reverend and exact, should be best known in connection with a scarlet-flowered herb from the Brazils! Botanically the change is right enough, but it is almost to be regretted that in the process of shifting names, "Verbena" could not have been reserved for the fragrant shrub which is now the Aloysia citriodora, though the classical appellation will no doubt cling to it, among the lovers of perfumes, as long as delightful odours remain sources of pleasure. The allusions to Verbena in ancient poetry are numerous and often very elegant. Medea encompassed her altar with a Verbena wreath when preparing to give youth again to Æson[*]; the priests wore chaplets of it on the morning of the death of Æneas[†]; carried by an ambassador it rendered his person inviolable; suppliants also bore Verbena; and being specially valuable in all magical operations, the name appears in the famous list of spells in the eighth Eclogue.[‡] Pleasant is it to observe that just this kind of collective denomination is in use to-day, for we need only visit the market-place on December 24th to find the Holly, the Mistletoe, the Arbutus, Pine, Laurel, and Fir all selling under the name of "Christmas," which, so employed, is literally the representative of the ancient "Verbena."

Whether flowers of any kind, in addition to green foliage, were comprised in the name "Verbena" is not clear; but there is reason to believe that Roses, at all events, were mingled with the sacred branches, and placed upon the altars—whatever flowers were used probably having special consecration, after the manner in which the Madonna Lily—so charming a feature in all early Christian art—is devoted in certain countries to the Virgin Mary.

Flowers upon Graves.—Primarily derived from the practice of dedicating particular trees and shrubs to the deities, was the custom, equally ancient, of planting and strewing flowers and foliage upon graves and tombs. People are so accustomed to associate practices of this description with Christian creeds, and the civilised sentiment of western Europe, that the profound antiquity which really pertains to them is quite lost sight of. It compares with the history of the Ferns, which are ordinarily taken just as a part of the garniture of the earth's surface, a something coeval only with mankind, whereas their dynasty is one of the most venerable our planet has witnessed. There is no need to adduce many examples. Sufficient proof is supplied in that beautiful line in the "Electra of Sophocles," (B. C. 440) where Chrysothemis describes her father's tomb as "garlanded around with every flower that grows" (895-6). Authors upon the subject say that "the Greeks considered all purple and white flowers as sacred to the dead, and that the Thessalians strewed the grave of Achilles with the immortal Amaranth and Lilies.[§] The tomb of Sophocles himself was embellished with Roses and Ivy, as shown by the celebrated epitaph ascribed to Simonides, that glorious old poet, who at eighty could still command a prize. Ivy, too, and flowers were planted round the grave of Anacreon; while in the whole of Virgil there is no passage more tender, pathetic, and natural than that which describes the preparation of the bier of the unfortunate Pallas, constructed of Oak and branches, the youth himself being likened to a flower gathered prematurely by the hand of a girl.

> Qualem virgineo demessum pollice florem,
> Seu mollis violæ, seu languentis hyacinthi,
> Cui neque fulgor adhuc, nec dum sua forma recessit!

So that if there were "nothing new under the sun" in the days when the Proverbs were written, still less can we find novel in the usages of to-day. The actual beginnings of things are very seldom near at hand, while many are only the last, the newest, and the best expression of something that dates back to Mr. Gladstone's *Juventus Mundi*.

In Rome, in ancient times, the Greek fondness for crowns and garlands constructed of flowers was carried to a far greater length, and, like most of the usages which the Romans adopted from eastern, and especially from conquered countries, became degenerate. So excessive at last was the passion for ornaments of this description, that the wearing of them was forbidden by law, except by privileged individuals, and these were in some cases very special and honorary. The civic garland, made of Oak leaves, was given, for instance, to men who had rescued a fellow citizen in a combat with the enemy. Cicero reproached the pro-prætor Verres with having made the tour of Sicily, wearing a crown of flowers upon his head, and a chaplet upon his back, while the couch or litter in which he was carried was strewn with Roses. Roses were used decoratively at banquets with the utmost extravagance, Plutarch relating of Cleopatra that she used upon one occasion no less than £200 worth; while for instances of prodigality in the use of flowers in general, we need only refer to the pages of Catullus. Extremes produce extremes, and after the downfall of the Roman empire we hear no more of flowers and chaplets for a thousand years.

It is necessary here only to add that in ancient Rome the manufacturers of the chaplets so much in favour were called *coronarii*, from which arose the practice in a later age, of applying the epithet *coronarius* to flowers suitable for crowns, and eventually to any others that were noted for their beauty or fragrance. Examples occur in the well-known specific names of certain familiar and old-fashioned species of Anemone, Philadelphus, Agrostemma, Hedysarum, &c. The final tradition of the ancient flower-coronet is found in the name of Carnation, which word is an abridgement of the older form "coronation," as employed by Spenser, and also by Lyte, in his "Niewe Herbal," A.D. 1568. A lady seated, and sorting flowers for use in a chaplet, gave occasion to one of the most famous pictures of antiquity, the painter of which, Pausias, contemporary of Apelles, in the time of Alexander the Great, is said to have been the first who attempted flower-painting. The picture in question was called Stephanoplocos, or the "Chaplet-maker," and found a purchaser in the renowned but voluptuous Lucullus.

Leo Grindon.

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[*] Ovid, Met., vii. 242. [†] Virgil, Æneis, xii. 120 [‡] See also Terence, Andria; iv. 3, Ovid, Fasti, i. 380, &c. [§] Millingen's "Curiosities of Medical Experience."

SPRING.

The sun is warm, the sky is blue,
The buds are full, the Grass is growing;
I wonder if the signs are true,
And winter really is going!
'Tis too good news, it seems to me,
That gentle Spring at last is coming.
This very morn I saw a bee—
But he was humming!
The seeds don't seem to show as yet—
I fear they've rotted altogether;
The winter's been so very wet—
But shall we have more settled weather?
Those fleecy clouds, on high that wing,
Can weep like Niobe's sad daughters;
And we perchance may find the Spring
A spring of waters.
Oh, gentle Spring! betray us not,
We can be dry, and yet hilarious;
And, pray, give back the watering-pot
To January's old Aquarius;
Where'er your tiny foot shall touch,
Bid blossoms spring, the greensward fretting—
For we've an appetite for such,
That needs no whetting. —*Fun.*

THE BEAUTIFUL IN GROUND-SURFACE.

Artists and men of taste have agreed that all forms of acknowledged beauty are composed of curved lines. The principle applies as well to the surface of the earth as to other objects. The most beautiful shape in ground is that where one undulation melts gradually and invisibly into another. Every one who has observed scenery where the fore-ground has been remarkable for beauty must have been struck by this prevalence of curved lines; and every landscape gardener well knows that no grassy surface is so captivating to the eye as one where these gentle swells and undulations rise and melt away gradually into one another. Some poet, happy in his fancy, has called such bits of grassy slopes and swells "earth's smiles;" and when the effect of the beauty and form of outline is heightened by the pleasing gradation of light and shade, caused by the sun's light variously reflected by such undulations of lawn, the simile seems strikingly appropriate. Though there is no positive beauty in a straight or level line, it is often interesting as expressive of power, and we feel as much awed by the boundless prairie or desert, as by the lofty snow-capped hill. On a smaller scale, a level surface is sometimes agreeable in the midst of a rude and wild country, by way of contrast, as a small level garden in the Alps will sometimes attract us, that would be passed by unnoticed in the midst of a flat and cultivated country. Hence, as there are a thousand men who value power, where there is one who can feel beauty, we see all ignorant persons who set about embellishing their pleasure-grounds, or even the site for a home, immediately commence levelling the surface. Once brought to the level, improvement can go no further, according to their views, since to subjugate or level is the whole aim of man's ambition. Once levelled you may give to ground, or even to a whole landscape, according to the theory, as much beauty as you like; it is only a question of expense. This is a fearful fallacy, however;—fearful oftentimes both to the eye and purse. It is not less fearful to see a fine varied outline of ground utterly spoiled by being graded for the mansion and its surrounding lawn, at an expense which would have curved all the walks, and filled the ground with the finest trees and shrubs, if the surface had been left nearly, or quite as nature formed it. Not much better, or even far worse, is the fancy many persons have of terracing every piece of sloping ground—as a mere matter of ornament—where no terrace is needed. It may be safely said, that a terrace is always ugly, unless it is on a large scale, and is treated with dignity, so as to become part of the building itself, or to be supposed, more properly, to belong to it than to the grounds—like the fine architectural terraces which surround the old English mansions. But little gardens, thrown up into terraces, are devoid of all beauty whatever,—though they may be rendered more useful or available in this way. The surface of ground is rarely ugly in a state of nature, because all nature leans to the beautiful; and the ceaseless action of the elements goes continually to soften and wear away the harshness and violence of surface. What cannot be softened is hidden and rounded by means of foliage trees, and shrubs, and creeping vines, and so the tendency to the curve is always greater and greater. But man often forms ugly surfaces of ground, breaking up all natural curves without recognizing their expression, by distributing lumps of earth here and there, by grading levels in the midst of undulations, and raising mounds on perfectly smooth surfaces; in short, by regarding only the little he wishes to do in his folly, and not studying the larger part that nature has already done in her wisdom.—*A. J. Downing.*

Weeping Beech in St. John's Nursery, Worcester.

An Indian Chief on Vegetarianism.—"Do you not see that the whites live on corn, but we live on flesh? that the flesh requires thirty moons to grow, and is often scarce? that every one of the wonderful seeds which they scatter on the soil returns them more than an hundredfold? that the flesh has four legs to run away, and we only two to catch it? that the seeds remain and grow where the white man sows them? that winter, which for us is the season of laborious hunts, is to them a time of rest? It is for these reasons that they live longer than we do. I say, then, to every one who hears me, before the trees above our huts shall have died of age, before the Maples of the valley cease to yield us sugar, the race of the sowers of corn will have extirpated the race of flesh-eaters, unless the hunters resolve also to sow.'

THE KITCHEN GARDEN.

GOOD KING HENRY.

We would particularly recommend to our readers, as a first-class vegetable for early spring use, the Good King Henry (Chenopodium Bonus Henricus), or English Mercury. This is, in many parts of England, Scotland, and Ireland, a rather common roadside weed, with a thick fleshy root, like that of a Dock, and grows to a considerable height. The lower leaves resemble those of Spinach, and are of a broadly triangular shape, often more than 3 inches long, stalked, sinuate or slightly toothed, rather thick and fleshy, and of a dark green colour. The upper ones are smaller and nearly sessile. It is extensively grown by the Lincolnshire farmers, almost every garden having its bed, which, if placed in a warm corner and well manured, yields an abundant supply of delicious vegetables a fortnight or three weeks before the Asparagus comes in, and for some weeks afterwards. From a south border we generally commence cutting the Mercury early in April, and continue cutting until the end of June. Some of our friends say they like it better than Asparagus; but we cannot go that length, though we like it very much. When properly grown, the young shoots should be almost as thick as the little finger, and, in gathering, it should be cut under the ground something the same as Asparagus. In preparing it for use, if the outer skin or bark has become tough, strip it off from the bottom upwards, and then wash and tie it in bunches like Asparagus. It is best boiled in plenty of water, with a handful of salt added. When tender, strain and serve simply, or upon a toast. Some have melted butter with it, others eat it simply with the gravy of the meat. Now, in cultivation, the Mercury will grow anywhere; but, to have it in the best form, superior cultivation is necessary. To this end you cannot have the ground too deep nor too rich. Hence we should say trench the ground 2 feet deep, mixing in an abundance of rich manure, and plant as early in the spring as possible. As the plant is a perennial, it is necessary to get an abundant yield of shoots, and to get them as strong as possible—and hence, in time, each plant may be a foot or more in diameter. In planting, we generally put the rows 18 inches apart, and the plants 1 foot apart in the row; and, after we begin to cut, we drench the ground frequently with manure water, or sprinkle the ground with guano in showery weather. Of course the plants must not be cut too severely until they are thoroughly established—say in the third year—and then you can scarcely injure them. A.

HOME-RAISED POTATOES.

(LATE SORTS.)

I now propose to take a survey of the sorts of Potatoes commonly known as late kinds, *i.e.*, those that ripen late, and that, under good storage arrangements, keep sound and good until new Potatoes come in to take their place. In the first place, I will notice the best varieties raised and sent out by Paterson, of Dundee, who has deserved well of his country for his efforts to produce a robust, healthy race of Potatoes; and in that he has been eminently successful, although, like too many enterprising men, he has gained more honour than profit. The Dundee varieties are all characterised by an exceedingly robust haulm, that amounts in many of them to coarseness; and the majority are better adapted for field culture, where they can be planted in rows $2\frac{1}{2}$ feet apart, than for gardens, where space is limited and the whole of it has to be effectually utilised. Paterson is now offering a new early white kidney, that resembles our Ashleaf, but is not so early; a new early red kidney, that inclines to be large and yellow fleshed, but is scarcely early enough for our southern notions; and two large round kinds, viz., Zebra, a second early, having purple stripes on the skin; and Early Perfection, a second early of the Regent type and a good cropper, that promises to make a good London market Potato. The new White Kidney (not the early one) is a type of the Dawes' Matchless section, long and flat, but probably not superior to that old variety. New Blue Kidney is rather an elongated roundish-shaped one, somewhat coarse in appearance, but evidently a great cropper. And last, but not least, is a batch of "Royal" rounds, with white, red, and purple skins, including the popular Victoria, Albert, Alexandra, British Queen, and Princess of Lorne, all of which are strong growers, large croppers, having white flesh, and they are also late keepers. The reason why so few of Paterson's Potatoes are cultivated in the south, is probably due to the fact that Dundee is too far north for purchasing small quantities to be profitable. Still, out of a dozen of Paterson's kinds, some certainly will prove established favourites, and eventually repay the first cost, which I can testify, as last year I grew them all, and intend giving them a better trial this year again. Our latest kidneys, and without doubt our best keepers, are the Lapstone race, of which I could mention at least a dozen named kinds, all of which are of the Lapstone family.

There is much talk and writing, especially at the times when the disease is prevalent, about the degeneracy of the Potato; but in such I have no reliance, for I have grown for several years a stock of the true original Cobbler's Lapstone, sent out some two-and-twenty years ago, and it is still as good, in every sense, as any of its more youthful compeers. One of the best of the Lapstones is Yorkshire Hero, a remarkably dry, mealy tuber, of great excellence, and a famous keeper; but if I mention at once such as Pebble White, Headley's Nonpareil, Daintree's Kidney, Brixton Pippin, Troughton's Incomparable, and Preston Prizetaker, it becomes evident that of the Lapstone family all are good, and yield a produce that will satisfy the most fastidious. Of late red kidneys that are in much request for exhibition purposes, I recommend Red Fluke and Cottager's Red Kidney, the latter being an enormous cropper, rather yellow fleshed, but a capital tuber for eating, and a grand help to the cottager if he has as many sacks of them in his store as he usually has of heads in his family.

Amongst round late kinds, I can recommend none more heartily than Purple Regent, an excellent keeping sort. The skin is thin, and the flesh almost as white as snow; and being a good cropper it stands in the foremost rank amongst our most useful table Potatoes. Wellington has somewhat flattened, roundish tubers, and red blotched eyes; and the Red Breadfruit is an entirely red form of this variety, but it seems to be a rather better cropper. Both of these have short, spreading haulms, and do not require so much growing space as coarser kinds, and they are also useful sorts for exhibition.

It will be evident that in a short *resumé* of this character, it is impossible to mention all those kinds that have been known amongst growers for some years past; for their name is legion. I have rather been desirous of showing that we have some cause at home to congratulate ourselves that the raising of Potatoes has not been neglected, and that we are now in the possession of sorts that cannot be excelled elsewhere. A. D.

Snowflake Potato.—In reply to Mr. Gilbert's inquiry respecting this Potato (see page 238), I beg to say that I have a seedling under that name which obtained a first prize at Messrs. Suttons' root show in November last; and a similar prize was also awarded to my seedling red kidney, named Oxfordshire Hero. I agree with Mr. Gilbert's opinion as to the beauty of the Climax Potato. I had some of it on poor loamy soil last year, and they were very handsome. First prizes were awarded them in the class of round second earlies at Oxford, Banbury, and Chipping Norton. They were much admired in the first collection of eight varieties at Moreton, and also at the Royal Horticultural Exhibition at South Kensington in November last.—James Betteridge, *Chipping Norton.*

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

New Tomato.—American growers of Tomatoes highly recommend Hathaway's Excelsior as one of the most valuable varieties, if not the most so, of all those at present in cultivation.

Rhubarb.—I have cultivated this for many years, and have grown, I may say, most of the new and old varieties of this esculent. But the best, both for forcing, productiveness, and flavour is Hawk's Champion, presented to me by my old and much respected master, Mr. W. Myatt, of Deptford.—R. Gilbert.

The Best Potatoes.—Last year I grew in the gardens here about forty varieties of Potatoes, including all the leading American kinds, besides a selection of English sorts, and I find the following three to be all that can be desired for their respective seasons, viz.: Royal Ashleaf, Coldstream, and the old Lapstone Kidney. The last named I have found to be still the very best of all late Potatoes, handsome in shape, good in quality, and if grown in well-worked rich soil, the best of all late croppers.—R. Gilbert, *Burghley.*

THE INDOOR GARDEN.

MELASTOMA MALABATHRICA.

This is an easily grown plant, and one which, if well attended to, makes a good bush; it even produces fine heads of blueish-purple flowers when not more than from 1 to 2 feet in height. Cuttings of it strike freely in bottom-heat under bell-glasses. Its foliage is of a purplish-green, very hairy, and contrasts well with that of its associates in a mixed stove. This species of Melastoma is very common in Malabar, where it is used much in the same way as the common Laurel is with us. It is therefore called the Malabar Laurel. Some of the Melastomads are considered difficult to grow, but this one grows as freely as a Pelargonium. It likes a soil consisting of equal parts of loam and peat, to which should be added a dash of sand.

Melastoma malabathrica.

J. Croucher.

LISIANTHUS RUSSELLIANUS.

BY T. BAINES, SOUTHGATE.

A short time since, a correspondent who signed himself "One of the Old School," gave his recent experience with this Lisianthus. Some years ago I had to give that attention to the cultivation of plants which I had previously bestowed upon the more indispensable departments of fruit and vegetables, and I then felt inclined to try my hand on anything that had the character of being difficult to grow; I soon found out, however, that mere rule of thumb culture, let it be ever so carefully carried out, was more likely to lead to failure than success, and I at once saw that without some knowledge of the physiology of the different subjects with which I had to deal, success was a mere matter of chance. This is an axiom applicable as regards even the cultivation of plants of the commonest description; but in the case of plants difficult to grow, such knowledge is indispensable, a remark which holds good to matters relating to fruit culture as well as that of plants. I have seen men who have grown as fine fruit, especially Grapes, as ever were cut from Vines, under certain conditions in one locality, entirely fail in another, though the same rule of thumb practice was carried out with most scrupulous exactitude; and the same remark applies with equal force to the plant under consideration, the culture of which requires intelligent management.

In April I obtained a packet of seed of it. I took a 12-inch seed-pan and well drained and filled it to within an inch of the rim with finely-sifted peat, containing a liberal admixture of sand and a little leaf-mould. On this I put a thin layer of sand, and gave the whole a good watering, to close up all interstices. This is essential; otherwise, as the seed is very small, it is liable, in subsequent waterings, to get washed down too deep to germinate. I then placed the pan in a stove near the light, but where the sun could not shine upon it, as the less water given until the plants are up the better. When the plants first make their appearance they are very small, and must be watered with care, or they will be washed out of the soil. They should be kept close to the glass, but shaded with a piece of tissue paper, for an hour's exposure to the direct rays of the sun will kill them. As soon as they were large enough to handle, I potted them in thumb-pots, using soil similar to that in which they were sown. During the summer I kept them in a stove close to the glass. I always shaded them, however, when the sun was shining, but never when it was not. As soon as they had made three pairs of leaves I pinched out the point, which induced them to push several shoots from the base. I repotted them into 4-inch pots, and never allowed the soil to become dry, for if they flag they die. If thrips exist in the house, they will attack them, more especially the little yellow one, that infests Orchids and Allamandas. Lisianthuses do not like smoking; I therefore dip them in tobacco-water, just sufficiently strong to kill the insects. About the end of September I place them on a shelf where they can stand within a foot or so of the glass, during the winter in the lightest place in a house the temperature of which is about 50° in the night. I set them in saucers on a few pebbles, and all the water which they receive during the winter, is applied to them in the saucers, as, if ever the surface soil about the collar of the plants gets wet in winter the plants damp off. About the middle of March they begin to push, and then I pot them into 12 or 15-inch pots well drained, using the same description of soil as before, but in a rougher and more lumpy state. I place five of the plants together in the middle of the pot, and water gently. I then set them in the stove close to the glass in a night temperature of 70°, with 10° or 15° of a rise by day in sunny weather, but I still shade them. They now grow apace, and there is no danger of damping if they are kept near the glass; but if they are plunged in the tan in a pit at the ordinary distance from the glass they all damp off in a week. When they have grown about 10 inches high, I stop all the leading points, an operation which induces them to break at every joint. I tie the shoots out regularly, and by the beginning of July they are in bloom, and keep flowering for a month or six weeks.

From a plant treated as has just been described, I have had 700 lovely flowers in one season. As soon as the seed is ripe, I gather it and throw the plants away. I never was able to keep a plant that had flowered through the winter. From the day they make their first appearance in the seed-pan until they have finished flowering, I never allow them for ever so short a time to be exposed unshaded to the sun. I never fumigate them, but keep them clear from insects by the use of tobacco-water. I always keep them as near the glass as possible, and I never allow them to become dry at the extremities of their roots; but in the winter I keep the surface soil about the collar of the plants dry, as otherwise they are almost sure to damp off. This and other plants of a similarly delicate character are fitting subjects for young gardeners to try their hands at, as the unremitting attention and close observation necessary to ensure success are eminently calculated to habituate them to exercise these most essential elements to success in other directions. The reason why this and numerous other plants are not so often met with as they used to be is obvious. Nowadays unlimited numbers of plants are required for indoor decoration, and for the production of quantities of cut flowers. This and many other old-fashioned plants are not so well calculated for these purposes as are some others, and consequently they have given way to such things as are found to answer best.

IRON FLOWER POTS AND VASES.

Mr. Buchanan, a Scotch gardener, long settled in New York, and now one of the leading florists there, makes the following interesting remarks on this subject in a recent number of the *Agriculturist*. It may be as well to say that, from personal acquaintance with Mr. Buchanan, we know him to be an excellent cultivator, and that he has a large business in furnishing vases, &c., in the most fashionable part of New York :—

> I believe that no material for pots is so conducive to the well-being of plants as iron. My attention was first directed to the subject by noticing the luxuriant and healthy growth of plants grown in iron vases, fully exposed to the sun even in our very hottest weather. Plants grown in marble and stone vases are as nothing in comparison with those in vases made of iron. I can only account for this difference from the fact that iron is the better conductor, and thus supplies a bottom heat to the plants. I have pots made of strong galvanized iron that have been in use for nearly a year, for growing Palms, such as Latania borbonica, Dates, Cocoa-nuts, &c., and have found them to answer admirably. I have no doubt that they are superior to porous or clay pots for specimen plants of any description, and they are not so likely to be broken by accident. They can be manufactured, when the size is 1 foot in diameter, for say a third more cost than clay pots ; I have not tried any smaller sizes. Were these pots to come into general use, they could doubtless be cheaply manufactured. Tin-plate would be strong enough for pots of small sizes, and would last some time before rusting.

Narcissi in Pots.—A writer in a contemporary, who is inclined to be severely hypercritical, speaks of Polyanthus Narcissi as ungainly plants when grown in pots, and intimates that the general public have done with them, as far as their cultivation in pots is concerned. I cannot believe that the general public have done with them; they belong to a section of fragrant, free-blooming bulbs, which lovers of flowers will not willingly let die, and they are very easily managed. Such varieties as Bazelman major, Gloriosa, Grand Primo, Grand Monarque, Lord Canning, and Soleil d'Or, are far too good and too acceptable as scented conservatory plants to be neglected. While, however, I stand by the Polyanthus Narcissus, I desire also to commend some of the border varieties as peculiarly well suited for pot culture. I have this season grown but two of these in pots, but they will never in future be wanting in our group of spring-flowering plants. One is Narcissus Trumpet major, the other N. Trumpet sulphur. These are the names under which they are obtained from the bulb growers in Holland. They are both single Daffodils; the former has bold yellow flowers, the latter is not quite so large. They can be obtained from any bulb dealer under the names I have given, and they are objects of great beauty when grown in pots. I use a good rich soil, such as I would for Hyacinths, and put four bulbs in a 32 or 24-sized pot.—Quo.

Imantophyllum miniatum.—This fine plant is generally considered to belong to stove plants, I believe, though it is sometimes grown in the greenhouse, and I have even heard of it being put out in the flower-beds in summer and doing well. It, however, clearly delights in a stove temperature, and comes into flower early in spring. Under such circumstances it throws its fine large trusses of orange-coloured flowers well up above the dark-green foliage, and is then a grand object for a vase. After it has done flowering is a good time to give the plants a shift when they are grown for early spring work; but when grown in a greenhouse, early spring would be the best time for the operation. The plant divides easily, and delights in a good strong sandy loam mixed liberally with leaf-mould. It should be well exposed to light during the season and watered liberally, and now and then with weak liquid manure. Treated in this way, robust thick-necked plants will be the result, and magnificent trusses of bloom supported on sturdy stems. In winter water must be given sparingly, but anything like "drying off" must be avoided.—J. S. W.

Jointing Hot-water Pipes.—I am about to fix some hot-water pipes. Can any of your readers tell me which is the best method of making the joints? Should I use india-rubber collars, or white and red-lead? The former method has been recommended to me ; but it is so far a novelty in Somersetshire that our workmen do not feel confident that the result will be satisfactory.—W.

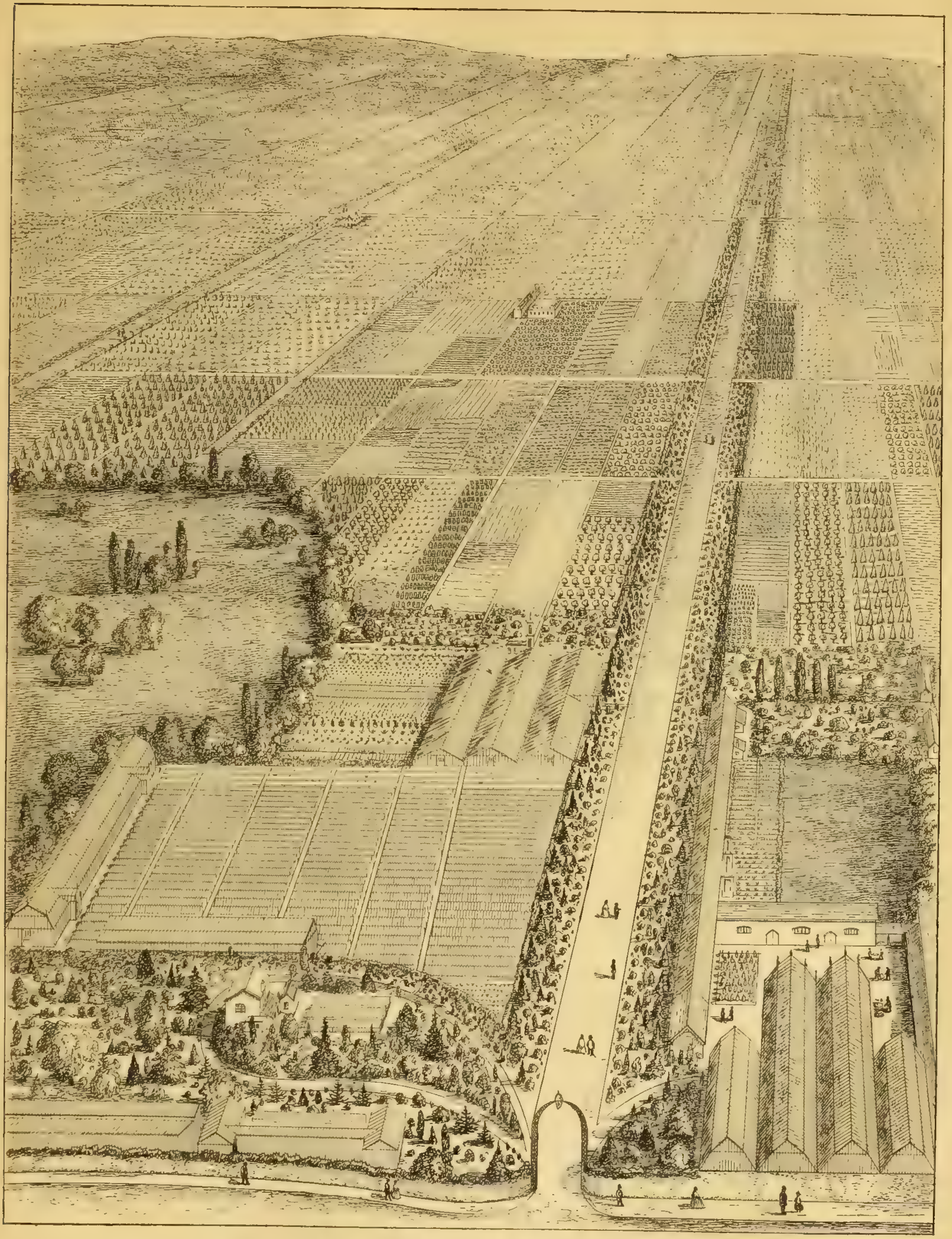
ST. JOHN'S NURSERY, WORCESTER.

It is our intention to give a series of illustrated accounts of our great commercial gardens, some of which are of far greater importance as regards instruction than the best supported public ones; and of the many great nurseries in the United Kingdom none is more remarkable or interesting than the well-known St. John's Nursery, belonging to Mr. Richard Smith, at Worcester. The rich and charming collection of beautiful plants from all temperate parts of the globe which it contains has a world-wide celebrity, such kinds only being cultivated as are likely to prove superior to, or more interesting than, their predecessors. These selections are increased and grown here in such vast numbers that one is puzzled to imagine what becomes of them. Of the grand old evergreen Magnolia grandiflora one finds here some twenty varieties, quite one hundred sorts of Tea-scented Roses, all well deserving of a place under glass, and one of the finest collections of wall shrubs extant. To give, indeed, some idea of the way in which some genera are represented here, it may be well to give the numbers of kinds of some important families of trees and shrubs, which are as follows : --

Abies	41	Junipers	53	Magnolias	34
Cupressus	31	Pines	72	Oaks	75
Piceas	24	Taxus	30	Spiræas	28
Retinosporas	21	Cydonia	23	Weigelas	32
Aucubas	23	Cytisus	19	Ivy	32
Clematis	53	Elms	27	Lilac	35
Daphnes	17	Heaths	29	Maples	22
Hollies	76	Hydrangea	20	Privet	15
Biota	19	Laurel	14	Thorns	33

These figures indicate a preference for the noble order Coniferæ, of which Mr. Smith possesses one of the finest collections anywhere to be seen. The department devoted to grafting and otherwise increasing rare Conifers here is most interesting, grafting being the only mode of multiplying some scarce kinds, of which it has been impossible to obtain seeds either on account of the difficulty of procuring them or because the kind may have happened to have been a natural sport differing widely from its parent, yet so unfixed in its variation that its seed (if procurable) would have returned to the normal type. Indeed, the difficulty of obtaining seeds of rare Conifers is more frequent than is generally imagined, and in these days of telegrams and high pressure speed as applied even to horticulture, it does not do to be behind the age; therefore, in order to overcome the difficulty, invention has been taxed to select for stocks the closest allied kinds of Conifers to those it is desired to graft upon them; and to an accurate observer it is surprising how soon a suitable stock is seized upon, potted, established, and then carefully grafted at the right season. Afterwards it is watched and tended daily for a few weeks in a close Wardian case, when a thriving young specimen of the desired kind, satisfactory in every respect, is the result. There is frequently another provoking trial to cultivators, which is this : A new and peculiar variety has to be multiplied, possessing, as usual, one leader only, and yet the plant must not be destroyed. In that case, recourse must be had to the side branches, say those of a Spruce Fir, which spread out flat, like the pinnæ on a Fern leaf, rather than radiating from the upright stem like the spokes of a wheel. A cutting or graft of this kind, when put upright, will be flat instead of round, an anomaly which can only be rectified by means of patience and high cultivation. When the young plant is in luxuriant health, it must be cut down, when it will be almost sure to throw up one or more leading shoots or *flèches*, as the French term them; and these leaders, if grafted on suitable stocks, are no more to be objected to than Greengages grafted on wildings, or Golden Pippins on Crabs. One never hears any one object to a Peach, Nectarine, or Apricot being budded on a Plum stock, and in that case the dissimilarity between graft and stock is vastly greater than that between Conifers and the stocks on which they are grafted.

Of late, increased attention has been paid to Ivies, and the so-called Tree Ivy, which has a bush-like form, is becoming a great favourite; it is, indeed, one of the most ornamental and beautiful of evergreens, its fine foliage and bushy habit being particularly pleasing during the winter months, when so many trees are uninteresting and leafless. There are twelve or more varieties of this kind of Ivy, some of which are



BIRD'S-EYE VIEW OF ST. JOHN'S NURSERY, WORCESTER.

variegated. It has been proved that cuttings taken from an Ivy which has assumed the tree form (as climbing Ivies do at an advanced age), and grafted on the common Irish Ivy, at once take the tree form without having to pass through the climbing state. To show how popular tree Ivies have become, we may mention that something like ten thousand plants of them are grafted in these nurseries every year. Perhaps no tree or shrub succeeds better in towns or smoky districts than Ivy, and for such places tree Ivies are invaluable, and, indeed, every arboretum or garden that does not already possess such plants should be enriched with a collection of them. In addition to these, Mr. Smith grows large numbers of climbing Ivies, including most of the varieties in cultivation, many of which are of a very striking character.

Here the eye and palate are great rivals, for one hardly knows which receive most favourable attention, Roses or fruits; undoubtedly the latter form quite a *spécialité*, for the many thousands of trees one sees in walking round are perfectly astonishing. One wonders where they all go to. Fancy 60,000 trees, all trained for walls or espaliers, ready for one season's sale! Why, at four yards apart, they would plant a length of eight miles and a half! Then there are besides immense numbers of standards, dwarfs, pyramids, and other forms of tree required for gardens, orchards, or houses.

The quality and symmetry of Mr. Smith's fruit trees must be well known throughout the country, for there is not a county in the United Kingdom into which there have not been introduced large supplies, and that they give universal satisfaction is proved by the largely increasing business. Perfection in cultivation is not easily attainable, but it is evidently striven after here. Half a million stakes are annually used in forming the trees, and no pains appear to be spared. Correctness of name is of primary consideration; for what is so annoying, after waiting for a fruit tree to bear, as to find that you have been deceived in the sort? The greatest care was given years ago to collect the sorts direct from their original sources where possible, and, in default of that, from the most reliable authority; and when doubt arose, proof was obtained by fruiting the kind in an orchard house. Stock plants of every particular variety are kept, and the most scrupulous attention is paid to the naming of the various sorts. During the time of budding and grafting, the greatest possible care is used to avoid confusion, and as from twenty-five to thirty men are employed at this work, it is not to be wondered at if an occasional error does occur; but in order to meet such an occurrence, the fruit foreman carefully examines every row when the trees are coming into leaf, when in full leaf, and again at the fall of the leaf, so that his practised eye inevitably detects an error should one have occurred, and the tree is at once destroyed.

Before walking round, Mr. Smith begged us carefully to try if we could find one blighted tree or one that appeared untrue, judging by others in the same row; it is only fair to say we did not observe one incorrect or diseased in all the stock. Of course aphides will occasionally attack almost every kind of plant, but they do not by choice feed on healthy trees; they no sooner make their appearance here than the trees are well washed with soft soap and water (the most effectual and speedy remedy) until there is no sign of a living insect; during the blight season some trustworthy men are always on the look-out for these pests, so that they have no possible chance of continuing their ravages for any length of time.

To give an idea of the importance attached to Roses, it is worthy of remark that 60,000 are yearly grown in pots under glass; 500,000 Rose cuttings for stock were put in last autumn, and there is a square of five acres and a half planted out entirely with Rose stocks for next summer's budding. Ten acres in the open air are devoted to Roses.

The collection of Oaks gathered together here is one of the most beautiful ever made, and besides the flowering and ornamental-foliaged shrubs, in which this nursery is very rich, there are forest trees, hedge plants, creepers, herbaceous plants, &c., all cultivated with the greatest care, frequently transplanted to render them safe for removal, and each plant from its earliest growth formed to make a handsome specimen. Thus, by early and constant care, the most perfect shape that can be desired is obtained without stiffness or formality. For years past the object has been to collect and multiply all the good varieties that could be obtained, and he must be difficult to please who cannot be satisfied in such a choice collection.

We were particularly struck by the cleanliness of the nursery—there was almost a total absence of weeds. Much attention is paid to this, so that every plant may be free and healthy in growth, for, where weeds prevail, stock must suffer more or less.

For the rearing and cultivation of stock there are two acres and a half of glass, composed of 1,750 pit-lights, and twenty-four houses, from whence several millions of plants are produced annually, requiring 150 tons of garden pots and 100,000 wooden labels every year. The nurseries occupy upwards of 150 acres of fully-cropped ground. The principal drive, going straight through the nursery, is one mile long. This is crossed by another seven-eighths of a mile long. There are thirty-two miles of walks, though no more than are necessary to attend properly to the stock. 250,000 Rhododendrons, Conifers, and other evergreens, flowering shrubs, Clematis, &c., are annually grafted under glass.

The packing is carried on in four large sheds, the largest 145 feet long by 19 feet wide, to which a crane is attached for lifting heavy packages into the railway waggons, which call daily. To give an idea of the extent of this department, it is sufficient to mention that, from the commencement of October to the end of the year, from eighty to one hundred men are constantly engaged in executing orders, and the following material is required for one season's supply:—100 tons of straw for packing, 350 bundles of willow bands (each 3 feet round), 5,000 bast mats, 1½ ton string, £200 worth of baskets, £100 worth of crates, and 80,000 parchment labels.

Of the Weeping Beech—to the picturesque appearance exhibited by which we have on several occasions alluded—Mr. Smith has a beautiful specimen, which we have thought worthy of separate illustration (see p. 299). This fine tree is upwards of 25 feet in height, and has a stem some 6 feet in circumference at the base. The spread of its branches varies from 35 to 40 feet in diameter. It was struck by lightning during the summer of 1857, but instead of being riven to pieces, like the generality of lightning-struck trees, the electric fluid only seared some of the main branches, and the health of the tree has in no way suffered from the shock. As will be seen, it is a grand example of this variety of Beech.

Rain and Vegetation.—*The Bulletin* of the Torrey Botanical Club contains a suggestive paragraph in reference to the influence of trees upon rain and atmospheric moisture, as shown by the experience of the island of Santa Cruz in the West Indies. This island is said to have been a garden of freshness, beauty, and fertility twenty years ago; it was covered with woods, trees were everywhere abundant, and rains were profuse and frequent. The recent visit of a gentleman who had known the island in its palmier days, revealed a lamentable change, one-fourth of the island having become an utter desert. The forests and trees had been cut away, rainfalls had ceased, and the process of desiccation, beginning at one end of the island, had advanced gradually and irresistibly upon the land, until for seven miles it had become dry and barren as the sea shore. Houses and plantations had been abandoned, and the advance of desolation was watched by the people, wholly unable to prevent it, but knowing, almost to a certainty, the time when their own habitations, their gardens and fresh fields would be a part of the waste. Indeed, the whole island seems doomed to become a desert. This sad result is owing entirely, according to the belief of the inhabitants, to the destruction of the trees upon the island some years ago.

Dimensions of the London Parks.—The Ordnance Survey Department gives the following: St. James's, 58·5 acres; Green Park, 60·3 acres; Hyde Park, 386 acres; Kensington Gardens, 245·5 acres; the Regent's Park, 406·2 acres; Victoria, 223·8 acres; Southwark, 63 acres; Kennington, 19·7 acres; Battersea, 199·4 acres; Greenwich, 190·4 acres; These ten parks, together containing 1,852·8 acres, are all within the registration division designated "London," which comprises 78,080 acres. Beyond these limits, but still within the district served by the Metropolitan Police, there is also Richmond Park, with 2,015·5 acres; Kew Gardens, &c., with 322·8 acres; Old Deer Park, with 357·2 acres; Bushey Park, 993·9 acres; and Hampton Court Park, 576·7 acres. These last five parks contain together 4,266·1 acres, which, added to the area of the ten parks first above-named, make a total of 6,118.9 acres of public park in or about London.

THE FRUIT GARDEN.

AMERICAN GOOSEBERRIES.

Mr. Hooker, of Rochester, says: I was struck by finding, on the coast of Maine, an abundance of wild Gooseberries with fruit nearly as large and good as that of the Houghton. These were growing among rocks, and in poor soil. Experience with other fruits shows that we must look to native-grown seedlings for our best and most profitable sorts. Little can be done to change or modify the constitution of a plant by special care or culture; we must go to the seed for all reliable variations, and when any disposition to vary from the original wild type is discovered, we must follow it up, and, in the end, secure the results most desired. With us the Gooseberry has not produced many new or promising variations; it has held well to the habit of all wild fruits. The only improved American Gooseberries which have come under my observation are the Houghton, a kind which strongly resembles the wild type, but which is more productive and somewhat larger, and better flavoured than those found growing wild. The Mountain.—This is very different from the first, and offers peculiarities of merit quite distinct and interesting. The plant grows tall and very large, and is abundantly productive of fruit. Both this and the Houghton are red in colour. Smith's Improved.—This variety presents the habit, slender branches, and moderately rapid growth of the Houghton, with much larger fruit, which is of a pale yellow or greenish yellow colour, and of excellent flavour. I am inclined to think that pruning and liberal culture will suit this variety well, and with these I do not see how it can fail to please. The accompanying illustration was taken from a well-grown plant in full fruit. The Downing.—This sort has stout heavy wood, very thorny, and an abundant rich foliage. I cannot say that I have found its fruit to be any great improvement in flavour on that of the Houghton, but it is twice as large as that variety, and it will, I think, be found that its increased size, remarkable vigour and productiveness, good colour, and certain crop, will place it among real acquisitions in its particular class. I look upon these new sorts as additions of real merit in themselves, and a strong assurance that, from their progeny we may reasonably expect soon to see a list of Gooseberries possessing all the good qualities that could possibly be desired in fruits of that kind.—*Cultivator.*

Smith's Improved Gooseberry.

New American Gooseberry "Downing."

KEEPING LATE GRAPES UPON THE VINES.

My experience in reference to this matter is in exact accordance with that of your correspondent "J. S. W." (see p. 266), and I most willingly endorse his assertion that the best way to keep late Grapes is to allow them to remain upon the Vines. Like your correspondent, I have never yet been able to perceive that doing so had the slightest effect in exhausting or in any way impairing the health of the Vines. I have not unfrequently been in the habit of commencing to cut late Grapes at one end of the house, and have cleared all the fruit from the first Vine before cutting a single bunch from the second, and so on to the end; so that the Vines which occupied the end of the house were relieved of their fruit probably two or more months before a similar relief was extended to those which occupied the corresponding or opposite end of the structure. All were, however, generally pruned at the same time, viz., those from which the fruit had quite recently been cut, and the others from which it had been removed at an earlier period. Nevertheless all the Vines have usually started or broken simultaneously, nor have I ever been able to perceive, as I have just said, any diminution of vigour on the part of those which had been compelled to bear the burden of their fruit the longest. Up to this point I, therefore, coincide with your correspondent; but he then goes on to say—"Grapes hanging upon the rod after they are ripe are no more burden than the leafless branches themselves." "Growth and maturation are completed, and there is no demand upon the Vine." Now I must say that I entertain some doubts as to the correctness of this assertion; at all events I think the subject demands, and is worthy of, careful inquiry. Supposing we sever a spur or shoot bearing a bunch of ripe Grapes from the Vine; cover, say, the incision with sealing wax or some similar substance, but allow the branch and the bunch of fruit attached thereto to retain their original position, it will probably be found that in the course of a few days the footstalks of the berries will have become more or less flaccid, and that the berries themselves will ere long become less plump and firm than those whose connection with the Vine has not been severed; and if this be so, it will certainly go far to prove the existence of something like reciprocity between the ripe fruit and the Vine on which it is supported, and that the fruit, though ripe, continues to derive something from the Vine to enable it to retain its plumpness, &c. From what I have already said it will, however, be evident that I am by no means inclined to think that the extraction of this "something," whatever it may be, on the part of the fruit, tends in any perceptible degree to diminish the vigour of the Vine. It appears to me that if the advocates of the bottling system were of opinion that ripe Grapes extracted nothing whatever from the Vines on which they hung they would hardly consider it necessary to put water in the bottles from which they suspended the bunches. The water contained in the bottles is doubtless expected to furnish the ripe fruit with a substitute for what the Vines would have supplied, had it been allowed to remain upon them. An idea of this sort induced me at first to think rather unfavourably of the bottling system, fearing, as I did, that if any portion of water was taken up by the fruit, that it would necessarily deteriorate its quality, and I confess myself, as yet, not altogether disabused of this notion; although it may be possible that what is supplied to the ripe fruit by the water in the bottles may not greatly differ from what would be supplied to it by the Vine themselves, if it was allowed to remain upon them. A year or two ago, while engaged in suspending from bottles some bunches of ripe Grapes, chiefly the Lady Downe's variety, I, by way of experiment, omitted putting water into some dozen or more bottles, and the result was pretty much as I had anticipated; in the course of a fortnight or three weeks I found that where the water was absent the footstalks of the Grapes had nearly all dried up, which was not the case in most instances where the end of the spur or shoot bearing the bunch was inserted in the water. Wherever a late vinery can be kept tolerably dry, and the introduction of plants in pots, &c., requiring water can be avoided, there can hardly be a doubt about the Grapes keeping best upon the Vines. But if, from whatever circumstances, these necessary conditions cannot be secured, then it may be advisable to have recourse to a dry, well-ventilated room and bottles of water, and if early in March, when the sap may be expected to be upon the move, any good fruit should still remain upon the Vines, I think it is then advisable to cut off the spurs bearing bunches, and to insert the ends of the former in bottles of rain-water, which may be regarded as a sort of *dernier ressort*, which sometimes succeeds admirably, but not always.

Culford, Bury St. Edmunds. P. G.

Living Copings.—There is one kind of protection that has not received the attention it deserves, that is, living copings of Ivy, Roses, Virginian Creepers, Jasmines, Clematises, &c. At first sight it might seem that few of these plants, unless it were the Ivy, had sufficient density of foliage to afford much protection to the trees below, but it is quite otherwise. I have observed a crop of Peaches saved year after year by the protecting power of a few sprays of a Virginian Creeper. It is a simple matter to run a few wires on studs projecting a foot or so from the wall immediately under the coping, and to clothe these wires with climbing plants, thus crowning the wall with verdure and beauty, and saving our fruit crops by one and the same process. Fancy a coping of Maréchal Niel—one of the best Roses possible for this purpose, owing to its free growth and early leafage and flowering—surmounting a wall studded with noble Peaches underneath. Living protectors have at least this merit, above all others; they would be cheap at first cost, durable, tolerably efficient, and assuredly beautiful.—*D. T. F.*

THE GARDEN IN THE HOUSE.

CHAMÆDOREAS AS HOUSE PLANTS.

If any one genus of Palms pleases me more than another it is this pinnate-leaved one. There are, however, many others in the pinnate section of great beauty, of which I may instance the genera Attalea, Cocos, Calamus, Plectocomia, &c., but I have found that whilst they are superb ornaments of plant houses, those kinds which develope their beauties in a sufficiently small state to be introduced to the dwelling-house, have not a robust constitution to enable them to remain pleasing to the eye for any length of time, whilst in the case of Attalea and some other genera, the plants become too large for ordinary apartments, before they assume their true character; indeed, with such kinds, a majestic port is their chief attraction, which, as a matter of course, cannot be developed indoors or upon the dinner table. Chamædoreas like plenty of water if the drainage is, as it should be, good; that is, it is best to err a little on the side of a too bountiful supply of water, than to allow them to suffer from drought in the least degree; on the other hand it is neither good policy nor good culture to keep the saucers always full of water. There is a great number of species of Chamædorea now in cultivation, some of which are closely allied to each other, and as the object of indoor gardeners should be to produce as much variety as possible, it would be useless to recommend such as require a practised eye to distinguish one from the other. If, therefore, the following list of species be considered a small one, it will, at least, have the merit of distinctiveness.

C. graminifolia.—It would almost be impossible to name a more elegant object than this fine Palm; indeed, but for one (I allude to Cocos Weddeliana), I should not have the least hesitation in asserting it to be the most graceful Palm in cultivation; its stem is as slender as that of a Reed, the pinnate leaves reach a length of 3 feet, and have a most beautiful curved outline, and the pendulous dark green pinnæ are some 10 inches long; each leaf, indeed, presents the appearance of a large graceful feather, and no more beautiful object can be found for the embellishment of the drawing-room or dinner-table. In winter, however, I would not risk it in the dwelling-house; but whilst small, it will thrive well enough in a Wardian case. It is a native of Costa Rica.

C. Ernesti-Augusti.—In this species, which is a native of New Granada, we have a grand contrast to the preceding; for the leaves, which are pale green, are from 1 to 2 feet long, by about 10 inches broad, situated upon short foot-stalks, and except that they are deeply cleft at the top, they are entire and slightly plaited; they are supported upon a straight annulated stem, which bears large branching spikes of flowers when quite young; these, as the seeds approach maturity, change to a deep rich red, rendering this Palm both conspicuous and ornamental. It thrives admirably under cool treatment.

C. Wendlandii.—This species I consider to be the best of the genus for room decoration; it has broad dark green arching pinnæ of great beauty. Plants of it stood in the open air, fully exposed to the sun, through the months of May and June, during the past season, without any care, the only ill effects arising from which was loss of colour; this, however, was soon restored with a little soot-water, and they are now of a rich dark green, and remarkably healthy. It is a native of Mexico.

C. Sartorii.—This is another beautiful kind, which bears a large crown of beautiful leaves, and bright-red flower spikes. It is a gem for house decoration. It comes from Mexico.

C. elegans.—This, as its name implies, is a charming plant. It is of somewhat robust habit for a Chamædorea, the pinnate leaves reaching a length of 3 or 4 feet, the pinnæ being from 6 to 9 inches long by 1 inch in breadth, and brilliant green; these, however, are the dimensions of mature plants; when smaller, it is a superb Palm for any purposes where plants are admissible. It is a native of Mexico.

C. Arenbergiana.—This acquires about the same dimensions as the preceding, but differs from it in having the pinnæ lengthened out into long tails, which renders it very attractive.

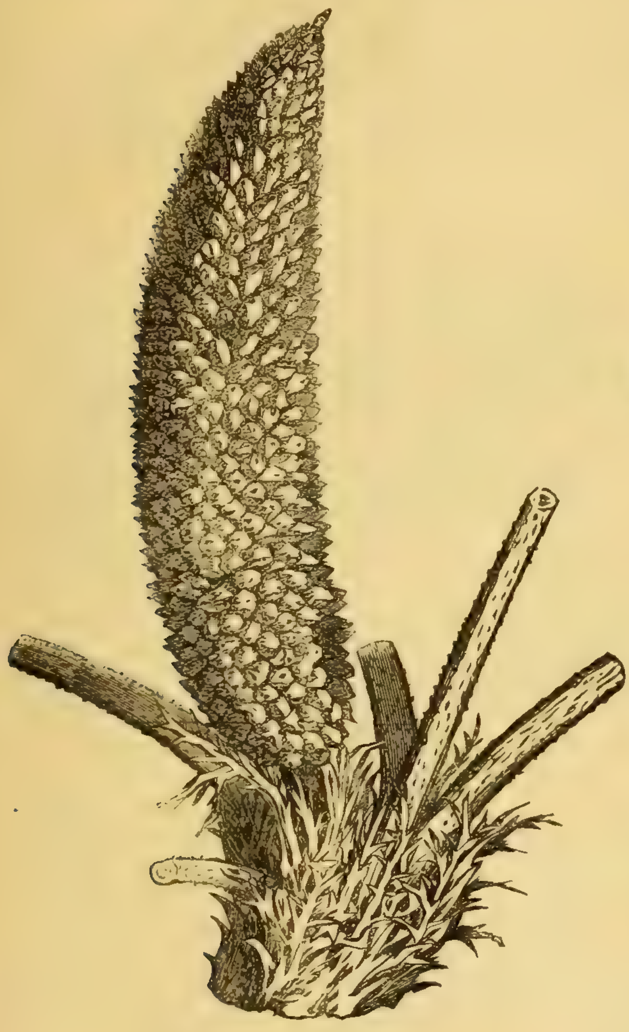
C. Martiana.—This is a slender dwarf species, which produces many little stems, bearing narrowly pinnate, drooping deep green leaves, and is a charming object in a Wardian case. It is a native of Chiapaso.—*Farmer.*

A Garden Land.—The climate of Tasmania is by far pleasanter than that of any part of the mainland. There are, one may almost say, no musquitoes. Other pernicious animals certainly do abound —but then they abound also in England. Everything in Tasmania is more English than in England herself. She is full of English fruits, which grow certainly more plentifully and, as regards some, with greater excellence than they do in England. Tasmanian Cherries beat those of Kent—or, as I believe, of all the world—and have become so common that it is often not worth the owner's while to pull them. Strawberries, Raspberries, Gooseberries, Plums, and Apples are in almost equal abundance. I used in early days to think a Greengage the best fruit in the world; but lately at home, Greengages have lost their flavour for me. I attributed this to age and altered palate; but in Tasmania I found the Greengages as sweet as they used to be thirty years ago. And then the Mulberries! There was a lady in Hobart Town who sent us Mulberries every day, such as I had never eaten before, and as, I feel sure, I shall never eat again. Tasmania ought to make jam for all the world, and would do so for all the Australian world were she not prevented by certain tariffs.—*A. Trollope.*

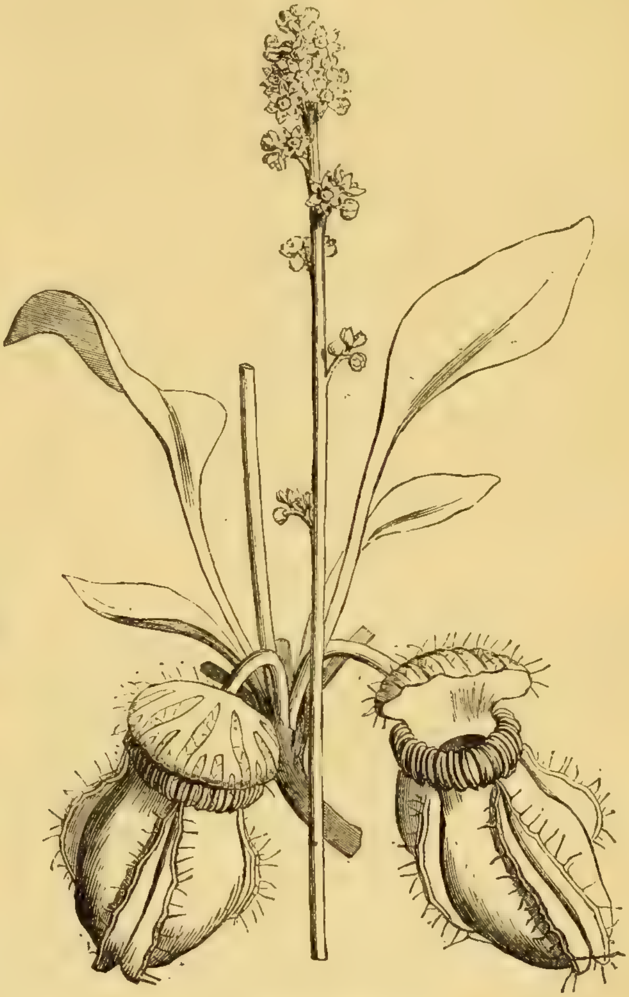
THE LIBRARY.

A GENERAL SYSTEM OF BOTANY.*

Of this excellent book, as it now stands, we cannot speak too highly. It is absolutely without parallel, comprising, as it does, in its two parts, the fullest and best illustrated treatise on the organization and anatomy of plants, and the most complete and satisfactory arrangement of the families. It is, indeed, in some respects an improvement upon the original work, which has hitherto stood unrivalled in its excellence as a "clear and precise structural and morphological account of the Botanical Orders, with a sketch of the affinities of each, its geographical distribution, and principal uses in medicine and the arts." In the English edition, the editor has, for obvious reasons of convenience, adopted the arrangement of De Candolle, which has been for some time established in our schools and universities, and with which our working botanists and herbarium-keepers are familiar. In the original, the sequence is that of A. de Jussieu, which commences with the Compositæ, the most highly-organised family, and ends with the families of lowest organisation. This alteration enhances the value of the work in no small degree to the English student. The additions consist of twenty-seven new Orders (twenty-four are mentioned in the preface, but Humiriaceæ, Philydreæ, and Xyrideæ have been omitted in the enumeration there) of plants which are mostly tropical, and twenty-three of which orders appear to have been totally unknown to the authors of the original work, as no allusion to the genera is to be found in it. Of the remaining four they have classed Triurideæ under Burmanniaceæ, Burseraceæ under Terebinthaceæ, and Samydaceæ under Bixineæ; while all the genera of Ficoideæ (except Trianthema, Gisekia, and Limeum) are differently arranged.



Flower-spike of Gunnera scabra.



Cephalotus follicularis.

There is also much additional matter in the shape of valuable notes appended to most of the orders, the whole concluding with a classification of plants by the natural method, and an Analytical Synopsis of the classes, sub-classes, cohorts, and orders, the want of which was a serious deficiency in the original. The translation has been carefully done, and, although not literal in many parts, faithfully renders the sense of the original. The English edition is also much more convenient in size than the French, and the paper, printing, and *tout ensemble* of the volume are all that can be desired. We give an extract, to show how the orders are treated, and also specimens of the illustrations.

SARRACENIACEÆ (Endlicher).

Perennial herbs, inhabiting the turfy, spongy bogs of North

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* "A General System of Botany, Descriptive and Analytical, in two Parts. Part I. Organography, Anatomy, and Physiology of Plants. Part II. Iconography, or the Description and History of Natural Families. Translated from the French of E. Le Maout, M.D., and J. Decaisne, Member of the Institute, by Mrs. Hooker. Edited and Arranged according to the Botanical System adopted in the Universities and Schools of Great Britain by J. D. Hooker, M.D., &c., Director of the Royal Botanic Gardens, Kew. In one Volume, medium 8vo, with 5,500 Woodcuts, from Designs by L. Steinheil and A. Riocreux." London: Longmans, Green, & Co. 1873.

America and Guiana. Root fibrous; leaves all radical, with a tubular or amphora-shaped petiole; blade small, rounded, usually lying on the orifice of the petiole. Scapes naked, or furnished with a few bracts, 1-flowered (Sarracenia, Darlingtonia), or terminated by a few-flowered raceme (Heliamphora); flowers large, nodding; sepals 4—5, free, very much imbricated at the base, sub-petaloid, persistent; petals 5, free, hypogynous, imbricate, deciduous, rarely 0 (Heliamphora); stamens ∞, hypogynous, free; filaments filiform; anthers 2-celled, versatile, opening by two longitudinal slits. Ovary free, 3—5 celled, placentas prominent at the inner angle of the cells; style terminal, short, sometimes dilated at the top, as a 5-angled or lobed petaloid parasol, with five radiating nerves (Sarracenia), or 5-fid, lobes narrow, spreading, reflexed, stigmatiferous (Darlingtonia), or obtuse, and terminated by an obscurely 3-lobed stigma (Heliamphora); ovules numerous, many-seriate, sub-horizontal, anatropous, raphe lateral; capsule 3—5 celled, loculicidally 3—5 valved; seeds ∞, small; testa crustaceous, sometimes loosely reticulate (Darlingtonia), or membranous and winged (Heliamphora); albumen copious, fleshy; embryo minute, near the hilum.

GENERA.

Sarracenia. Darlingtonia. Heliamphora.

This little family approaches Papaveraceæ in hypopetalism, polyandry, numerous ovules, capsular fruit, fleshy copious albumen, and minute basilar embryo; but Papaveraceæ differ much in habit, proper juice, caducous dimerous calyx, and one-celled ovary, with parietal placentation. Sarraceniaceæ are connected with Nymphæaceæ by the same characters, and also by the always radical leaves, one-flowered scape, and aquatic habitat; but Nymphæaceæ differ in their numerous several-seriate petals, placentation, sessile stigma, and double albumen. Certain affinities or analogies have also been indicated, which link Sarraceniaceæ with Droseraceæ, Pyrolaceæ, Nepentheæ, and Cephaloteæ.

[All are natives of America, and chiefly of the United States. Darlingtonia inhabits the Rocky Mountains, and Heliamphora the Roruma Mountains of Venezuela. Of the properties of Sarraceniaceæ little is known. Sarracenia rubra has been vaunted in Canada as a specific against small-pox, but has not proved such. The pitcher-shaped leaves are effective insect traps; a sugary secretion exudes at the mouth of the pitcher, and attracts the insects, which descend lower in the tube, where they meet with a belt of reflexed hairs, which facilitate their descent into a watery fluid that fills the bottom of the cavity, and at the same time prevent their egress.—*Ed.*]

COOKING BEET.

In the process of cooking, Beet is frequently made very hard and almost inedible, and the seedsman or gardener is made to bear the consequences of the cook's shortcomings. Following up our experimental trials, we have looked into the cook's department, and offer to our readers the following conclusions:—1. In preparing Beet for cooking, the greatest care must be taken not to bruise the skin, or in any way wound the root; and if by accident any injury has been done to the root, bake and not boil. 2. If a deep crimson hue is the colour preferred in the Beet, or a firm flesh, this is best attained by baking the roots. 3. If a light clear bright colour is desired, or a soft juicy flesh, then boiling will secure this. 4. If a rich agreeable flavour is sought for, then select the Beet which, before cooking, has the most purple in it, and the flavour may be discovered by masticating a small portion of the uncooked root. If good it will leave a rich agreeable flavour on the palate without any sensation of astringency in the throat. Barr's selection of Nutting's Beet has the desired qualities in the highest degree. 5. Crimson-fleshed Beets are all very rich in flavour, but when masticated uncooked, an astringency will be discovered as above described; this class of Beets, however, has its advantages, inasmuch as it can be sown earlier. Barr's selection of Pine Apple Beet is the most desirable of these; it may be sown very early, and will not run to seed. 6. Scarlet-fleshed Beet possesses least of the saccharine flavour, and Nonpareil best represents this class.—*Barr and Sugden's Catalogue.*

Mould on Preserved Fruits.—A lady of considerable scientific attainments said, at the last British Association meeting, that the atmospheric germ theory of vegetation has a practical bearing in household economy. The old practice in making jams and other conserves was to leave the pots open for several days before sealing them. She says that this gives the germs in the air an opportunity to settle in the rich soil of preserved fruit; and the seeds thus sown produce an abundant crop of the microscopic vegetation known as mould. It is far better to seal jars while their contents are still hot.

GARDEN DESTROYERS.

MICE.

I have not the slightest doubt that the short-tailed field mouse or vole is the culprit in cases in which Ash trees are barked. The long-tailed field mouse does not make tunnels and runs in Grass and pastures, but the short-tailed vole does. The former is very destructive to the bulbs of yellow Crocus (it seldom touches those of any other colour), and also to all kinds of Peas. The vole prefers green meat. I put a small tree of Pyrus spectabilis a month or two since in by the heels for a time, in a heap of leaf-mould, and some of the branches were soon barked; shortly afterwards my dog turned out two short-tailed voles in the exact spot where the tree had been. They had just eaten off every umbel of bloom from a magnificent patch of Iberis gibraltarica on my rockwork. The fragments were strewed all round their hole. I immediately poured a large supply of boiling water therein, and trust I have "settled" the inmates. Can any one tell me how to bait a trap for these mice? They have hitherto beaten me altogether. They are very destructive to the young leaves of Carnations in the spring. The long-tailed field mice are easily disposed of by means of traps baited with toasted cheese. I caught seventy this winter in my garden in eight weeks. H. Harpur Crewe.

Drayton-Beauchamp Rectory, Tring.

VINE PESTS.

At page 262, a correspondent writing on this subject recommends a mixture of lime and sulphur as a remedy for red spider, or rather a solution of the mixture applied with the syringe to the foliage of the Vine, for the destruction of that pest. Lime and sulphur boiled together will make a liquid that will destroy any foliage, and if weak enough to be used with safety, I should doubt very much if it would kill red spider. It may be well to caution your readers as to the danger that may arise from the use of such a mixture. The same writer recommends coating the hot-water pipes with sulphur for the same purpose, without any caution as to the time when such work should be done. Now if the house be full of young Grapes they may be all rusted and spoilt, but I am quite sure the red spider will not be killed. Still more dangerous is his advice to strew sulphur on fresh-slaked lime, an operation which would be little less destructive than burning sulphur in the house. I have no doubt that it would kill the red spider and also the foliage on which it feeds; indeed, I have heard of serious mischief arising in two cases from this way of trying to kill this pest. My own experience of sulphur is that it is the only known remedy for mildew, but that it is quite useless as a destroyer of red spider when feeding on growing plants. Then again, the same writer recommends hot coals in fumigating with tobacco. As these often give off sulphur, tender foliage is thus frequently destroyed, and I have known instances in which tobacco paper of good quality has been blamed for injury caused in that way. Not long since I was sent for by a gentleman to see his Vines, which were dying. He had read in a gardening paper, he said, that it was a good thing to dress Vines with linseed oil to destroy insects and their eggs, and he had followed the advice. The consequence was his Vines had to be cut down to the ground, for they were unable to start their buds the following spring.

Chilwell. J. R. Pearson.

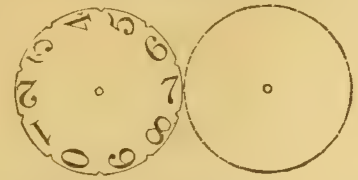
Crocus Enemies.—Long-tailed field mice do not, I believe, do any appreciable damage to Crocus flowers. The culprits in this case are sparrows. A neighbour of mine who grows large quantities of Crocus biflorus—the Scotch Crocus—sometimes has almost every bloom pecked to pieces by these birds. I believe they find the nectary appetising food. Slugs eat pieces out of the petals, and sometimes gnaw off a whole petal, but they do not destroy the flowers piecemeal like the sparrows. I believe that chaffinches sometimes lend a helping hand. I have seen them picking off the flowers of Primroses and Polyanthuses.—H. Harpur Crewe, *Drayton-Beauchamp Rectory, Tring.*

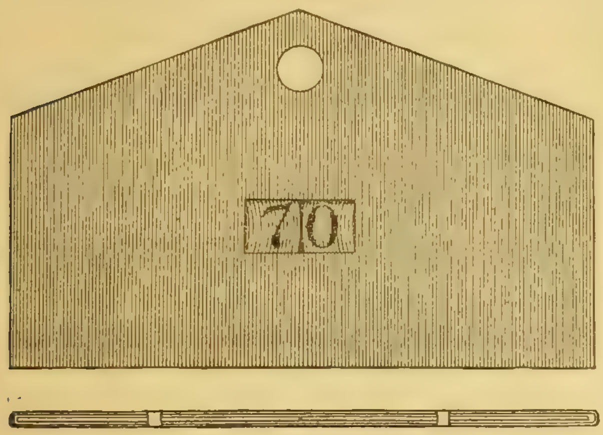
Bullfinches *v.* **Gooseberries Bushes.**—The man who has pruned our Gooseberry trees here for these 35 years declares that never until this year have bullfinches attacked the buds. This season one-half of them is pecked out by these little depredators. I know personally that for five successive seasons they have not molested them. These mischievous little pests are, however, protected by the late Act of Parliament.—R. Gilbert.

May Bugs.—In the Royal forests of Bischofsroda a successful experiment has lately been made in destroying may bugs on a large scale. The modus operandi was suggested by the observation that these bugs always select warm and loose ground for the deposition of their eggs. Consequently, 17 artificial breeding places were prepared by covering fresh cow-dung with fine earth; and by the middle of July these were found full of eggs or grubs. After carefully collecting these eggs, &c., they were burnt outside the forest.

TEMPERATURE INDICATOR.

Where the forcing houses about a place are numerous, and where different temperatures have to be kept up in almost every house, it is quite necessary that the young men in charge of them should have some index or guide as to the proper temperature to be kept up in each. The following diagrams exhibit an invention of Mr. Titus Salt, of Milner Field, which supplies the desideratum in question in a very efficient way. The contrivance simply consists of two discs made to revolve and to display two figures at the opening in the case, so that the head gardener can fix at any point, from 1 to 99, whatever temperature he may wish to be kept up in the house. The whole is made (or ought to be) of copper, and the discs ought to project a little below the case, so as to be moved easily by the finger. The discs are stamped with the numbers and afterwards painted. These little indicators may be seen in use in many of the houses at Milner Field.





WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—This department is now becoming every day more interesting. Hyacinths are at their best, and Tulips are beginning to expand; therefore loosen the soil a little amongst them, so as to give the beds a neat appearance. Keep beds containing Iberises, Daisies, Alyssums, Pansies, &c., also in good order. Such beds as are empty should be planted with Viola cornuta, bedding Pansies, Nasturtiums, Tropæolums, Hollyhocks, roots of Fuchsia fulgens, Salvias, Cannas, Dahlias, Echeverias, the finer kinds of herbaceous and other plants, all of which should be put into the positions they are destined to occupy throughout the rest of the year. In the event of frost, a slight protection in the way of evergreen branches or Broom twigs may be placed amongst them. Various kinds of annuals may now be sown out of doors; even such kinds as Stocks, Asters, and other rather tender sorts, may be safely sown on a warm border, and afterwards transplanted. Thus treated, although later in coming into bloom, they continue long in flower. Have all pruning of Roses and evergreen trees and shrubs finished for a season, and likewise the tying and training of wall and pillar plants. Plant out bulbs of Tigridias in flower beds, marking with little pegs the places in which they are put, so that in refilling the beds next month they may not be disturbed. Sow biennials for next year's blooming in a border, so that they may be afterwards transplanted in moderately rich soil. Bedding plants of all sorts must now be as freely exposed to air as is consistent with health; but weak and very young ones must still receive more favourable treatment, in order to encourage growth.

Conservatories.—Plants in conservatories have now started vigorously into growth, and should therefore be judiciously thinned, especially in the case of rampant growing sorts; rub away all weak and superfluous growths, and do not permit the remaining branches to become too thick, strong well-ripened wood being what should be aimed at. Keep up successions of plants in the forcing-house, greenhouse, stove, or pits, to take the place of such as get out of bloom in the conservatory. Azaleas done flowering should be repotted in a compost of good fibrous peat, intermixed with some loam, leaf-mould, and sand, and should be removed to some warm structure to complete their growth. Whilst there they should be syringed twice a day, and their shoots should be pinched at the third or fourth leaf of the first growth, but afterwards they should be encouraged to grow. Old plants seldom require repotting, but should be fed with manure water. Good syringings will now be necessary; they encourage growth and wash the foliage. Fumigate on a calm dull evening, if insects are troublesome; but, if fumigation be objectionable in the conservatory, remove the infested plants to a pit or frame, and fumigate them there.

Greenhouses.—Shift Balsams as they require it, using rich material for the purpose, and give them, if possible, the benefit of a little bottom heat. Treat Cockscombs in a similar manner. Select some of the finest plants of Humea elegans for conservatory purposes. Give them a shift if they require it; if not, supply them freely with manure water. Cyclamens that have done blooming store away in a pit or frame, but do not keep them wholly dry. Those bearing seed place on a shelf in any of the houses, in a position near the light, but shaded from strong sunshine. Thin out plants of ornamental Grasses that were sown in pots, and keep them near the glass. Never permit Lilacs in pots to suffer from want of water, and keep them near the light, in order to induce strong flower-bearing branches. Train tree Mignonette, and keep up a supply of select varieties of the common kind in pots. Good drainage, moderately rich soil, plenty of water, and a little shade are necessary for the production of good Mignonette in pots. Annuals, such as Clintonia pulchella, Brachycome, Schizanthus, Salpiglossis, Portulacas, Browallias, &c., should be sown again to succeed those sown three weeks or a month ago. They should be thinned as they advance, or pricked off and potted separately. Sow some Globe Amaranths, and treat them precisely in the same way as Balsams, except that they do not require so much pot room; and too rich soil in this case is rather objectionable than otherwise, as it often causes them to damp off quite suddenly when in flower. Stake herbaceous Calceolarias, and now that their flower buds are developed, supply them occasionally with manure water; a cool-dry house and a position close to the glass suit them best. Cut back early bloomed Cinerarias, and keep some of them in a frame with a north aspect for late flowering. Set outside such plants of Tropæolum tricolorum as have done flowering; but, if seed is required to be saved, the plants are better kept under a roof, a cool-house or shed being quite good enough for them. Train out and tie the shoots of pot Roses, admit air freely to them, and keep the plants near the light. Place a mulching of manure on the surface of the pots of Statices, water freely, and keep the plants in a warm pit or corner of the greenhouse. Callas that were brought early into flower, and which are now throwing up suckers, may have the latter separated and potted singly; such plants of these as are now in flower, or are showing bloom, should be kept in a warm place and well watered, a little liquid manure occasionally being beneficial to them. Plants of Lily of the Valley that have done blooming should be stored under stages, or in frames, and kept moderately dry. Plants of show and fancy Peargoniums that are required for late flowering cannot be kept too cool, provided they are kept out of the reach of frost and cold draughts. For earlier blooming sorts warmer treatment is necessary; but, under any circumstances, a position for them near the glass is of primary importance. Zonal Pelargoniums, for the decoration of the conservatory, must be kept growing. Chrysanthemums may now be set out of doors at the base of a wall, or plunged in a border, and the old stools turned out of their pots and transplanted in borders.

Greenhouse Hard-wooded Plants.—Let Camellias done blooming be placed in warmer quarters, and old unshapely plants of them may be cut back and placed under similar circumstances, to induce new growth. Cut back Epacrises that have done flowering, and place them in a close frame until they begin to grow, when they should be repotted in a compost of fibrous peat and some sand. Cut back soft-wooded Heaths, and pot both hard and soft-wooded kinds, after they have begun to grow a little, in good fibrous peat and sand. Hard-wooded greenhouse plants, as a rule, if not already done, should be potted now and kept rather close until the roots have taken well to the new soil. Old plants do not require potting oftener than once in four or five years, and even then perhaps it may not be advisable to increase the root space; therefore the ball must be reduced, and the plants again potted in good compost in the same sized pots as those out of which they came.

MARKET GARDENS.

French Beans.—This being an exceptionally late season, and the earth cold and wet, the first sowing of these, instead of being made early in April, has been advisedly delayed until now, when they are being put in in rows between lines of Lettuces planted 2 feet apart; if the drills for the reception of the seeds be opened in the first part of the day and the seeds sown in the afternoon, when the ground about them will be nice and warm, they will not be so likely to suffer. Draw the soil over the seed with the feet and leave the rows, as it were, in little ridges. On a warm well-sheltered border draw drills 15 or 18 inches apart and plant therein, 5 inches apart, French Beans that have been raised in heated frames; if the situation be very favourable they will survive without any artificial protection. The safest way, however, is to prepare a piece of well-sheltered ground, and to draw lines 3 feet apart across it, and others 2½ feet asunder along it, and upon every little square thus marked place an ordinary handlight, under which plant eight French Beans. If there are not sufficient handlights for the whole space to be planted, use half-bushel vegetable baskets; but as these are so open to wind they should be covered for a time with mats. The handlights being now removed from the Cauliflowers, are used for Beans, and after they become established the handlights will be available for Vegetable Marrows. Frames may also be used for the French Beans, when four rows should be planted under each light, the plants being about 4 inches apart in the row. After the plants have taken fresh root, plenty of air must be admitted. The frame produce is generally the earliest.

Cucumbers.—These must be planted as the plants are ready and convenience permits; the dung-pits yet to be made may not be quite the width of the frame, but formed so that the greatest heat may be immediately under the plants, which can be effected by confining the pit within 6 or 9 inches at back and front of the frame. Before planting, introduce the soil and leave it roughly undulated, so that it may become equally warmed before the roots of the plants are inserted amongst it. In raising Cucumbers after the seed has germinated, the young plants are pricked off two in a 6-inch pot, and in this way, without separation, they are planted, the contents of each pot being placed under each light. Succession plants are of little or no use, for, from several years' observation, it has been found that the earliest planted Cucumbers are the first to produce fruit, and that under proper treatment they continue in good bearing condition quite as long as any of the so-called succession plants; indeed, the Cucumbers from April to October should be the produce of one sowing, or two at the most. A few reserve ones should, however, be kept in stock in case of some mishap.

Tomatoes.—These should now be pricked off from the seed-pans into pots, say four into a 6-inch pot, and the pots plunged in a row along the back in the Cucumber frames. A frame may, if necessary, be specially prepared for them, when, instead of being pricked into pots, they may be pricked into the soil, and afterwards, when they become too thick there, dibbled into pots in a separate frame. In this latter way they are much more manageable than they otherwise would be.

Celery.—The seedlings sown on the beds that were covered with litter, like those for Turnips, are now up, having germinated freely; therefore remove the covering throughout the day, and if the beds be dry, water them through a fine rose. If long rods or spars of wood be laid across the beds about 6 or 8 inches higher than the soil, mats and litter can be more easily applied at night, and removed in the morning.

Turnips.—The first main sowing has made good progress, and a second should, if not already done, be sown broadcast. Those sown on the heated beds have passed safely into the rough leaf, and promise well.

Radishes.—From all sowings now remove the litter with which they have been covered, and what cannot be converted into manure build into a stack. Sow according to requirements and land to spare for that purpose. Those sown in frames have been marketable for some time past; those grown on heated beds and covered with litter are now in fine saleable condition, and with favourable weather the first outdoor sowing will soon be coming into use, especially those next the foot of walls, fences, or hedges.

Lettuces.—Those protected in frames during winter have all been planted, and are in most cases growing well. Some of them have been planted in fields in rows 18 inches apart, others 20 inches apart, with a line of Parsnips between them; some between rows of Coleworts, so that they are now fully occupying the space emptied by the removal of the latter; others in rows, 15 inches apart with a 2-feet space between every two, this space being reserved for Runner or French Beans; some in rows between the lines of Cauliflower, and alternately in the same line as the Cauliflower, and others between rows of spring Cabbages, with sets of Seakale planted between the Cabbages and Lettuces. Keep the hoe constantly at work amongst them, and use it deeply, for the crop is much later this spring than last. Thin a little those sown in February in frames, and fully expose them during the day. A succession to succeed them should have been sown in a warm border.

Cauliflowers, &c.—The earliest Cauliflower is considerably behind what it was at this time last year; therefore encourage its growth by always maintaining a loose surface soil amongst the plants, and still preserve the handlights for them, unless you regard the French Beans as more deserving of such assistance. Cauliflowers planted amongst Cabbages have borne up well, and are looking moderately promising; those, too, appear to be in good condition that have been planted at the base of trenched ridges, which are now being almost levelled from repeated hoeings. Sometimes the ground before planting is sown broadcast with Radishes; then the Cauliflowers are planted in rows 2 or 2½ feet apart, and lines of Lettuces and alternate plants of the same are likewise planted amongst the Cauliflowers. Spinach is sometimes substituted for Radishes; but Lettuces, as a rule, are then dispensed with, as the Spinach, being of quick growth, is apt to overgrow and choke them. Clear off Colewort plantations, as the ground will be required for French Beans, Vegetable Marrows, Beet, &c. Thin out the Cabbage plantations, and bunch the thinnings as Coleworts, Cabbages (both green and red), sprouting and other Broccoli. Some Savoys, Brussels Sprouts, &c., should be sown in some miscellaneous border; indeed, if they had been sown a week or ten days ago they would have been more seasonable. Stakes must be prepared for the support of the Coleworts that are being saved for seeding purposes, as they are just coming into bloom.

Rhubarb.—Plantations formed this spring are growing away strongly, and from the intervening space between the lines a crop of Lettuces, French Beans, Cauliflower, Cabbage, Spinach, Brussels Sprouts, &c., may be taken, yet it is not advisable to crop the ground too severely. Keep gathering from the old plantations as they continue to yield, always pulling away the leaves and never cutting them, and in tying them into bundles keep the best of the leaves towards the outside and the smallest within.

Miscellaneous.—Finish the earthing-up of Asparagus beds as speedily as possible; continue to cut Seakale as it appears, but do not fill up the broken parts of the ridges after the crowns have been cut. Weed Onions sown in lines and beds, but permit those sown broadcast to advance a little before they are touched; immediately, however, they can be well discerned, the short, narrow hand-hoes may be set at work amongst them. Sow Spinach broadcast where room is to spare, also Parsley in beds, if not already done. Prepare for sowing the crop of Beet and Mangolds, and also Wallflowers, if not already done. Fully expose the young Leeks in frames, also knotted Marjoram, both of which may soon be transplanted. If any have tender fruits on walls, protection for them should be provided. Finish grafting at once, especially that of stone-fruit trees.

COVENT GARDEN MARKET.

April 18th.

Flowers.—Of these the supply is good and the demand brisk, yet last week was the recognised one for extensive business, as growers annually look forward to Easter week, in which they know that the demand for cut flowers and plants in pots for church decoration is great, therefore they enlarge their supply and increase their price accordingly. Pelargoniums, Roses, Hoteias, Calceolarias, Cinerarias, Cytisus, Ferns, &c., constitute the bulk of the pot plants. Cut flowers comprise seasonable blooms from the stove, conservatory, and open air. The usual supply of spring flower roots, climbing plants, and miscellaneous subjects continues to be furnished in abundance.

Fruit and Vegetables.—The supply of St. Michael's Pines is nearly over, and home-grown ones of good quality are scarce for the season. New English Grapes are good, and tolerably plentiful; there is yet a considerable quantity of old ones of excellent quality in the market. English-grown Peaches of excellent quality have just appeared. French Asparagus of wonderful size has just arrived, and likewise good supplies of French Beans, Broad Beans, and salading.

Prices of Fruits.—Apples, per half sieve, 3s. to 5s.; Cobs, per lb., 2s. to 2s. 6d.; Grapes, hothouse, per lb., 15s. to 30s.; Lemons, per 100, 6s. to 10s.; Oranges, per 100, 4s. to 10s.; Pears, kitchen, per doz., 1s. to 3s.; dessert, per doz., 6s. to 18s.; Pine-Apples, per lb., 6s. to 10s.; Strawberries, per oz., 9d. to 1s. 6d.; Walnuts, per bushel, 15s. to 30s.; ditto, per 100, 2s. to 2s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 5s. to 10s.; French, 10s. to 30s.; Beans, Kidney, per 100, 1s. 6d. to 2s. 6d.; Beet, Red, per doz., 1s. to 3s.; Broccoli, per bundle, 9d. to 1s. 6d.; Cabbage, per doz., 1s. to 1s. 6d.; Carrots, per bunch, young, 1s. 6d., old do., 6d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 2s. 6d. to 4s.; Cucumbers, each, 6d. to 2s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 2d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 3s. to 6s.; pickling, per quart, 6d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 5s. to 8s.; Potatoes, per bushel, 4s. to 8s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Savoys, per doz., 2s. to 3s.; Scorzonera, per bundle, 1s.; Seakale, per basket, 1s. to 2s.; Shallots, per lb., 8d.; Spinach, per bushel, 3s. 6d. to 5s.; Turnips, old, per bunch, 3d. to 6d., young do. 2s.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

BITTON.

From the earliest issues of "Sweet's British Flower Garden" down to the latest numbers of The Garden, the names Ellacombe and Bitton frequently occur in gardening literature, and the Bitton collection is known to most lovers of hardy plants as one of the most interesting in Britain. To satisfy a long-felt wish, and in response to repeated kind invitations, I at last found myself there on the 12th inst. The sunless winter has caused a late spring, and a cold cloudy day dims the beauty of the spring flowers. Only a small part of the collection is as yet visible above-ground, and therefore it is far from being a favourable time to see the garden; but perhaps the paucity of kinds may be compensated for by the sight of novelties hardy enough to blossom so early after such a season. It is a good garden where one makes new friends or sees old rarities thriving apace, and here, flourishing by the hall door, is one of those beautiful evergreens which I last saw on the foothills of the Sierras—like Laurels standing for shade near the Pines, and helping, with the noble evergreen Oaks of the hill country, to make a glorious evergreen copse beneath the gigantic trees. It is the Californian Laurel (Tetranthera californica), which has proved perfectly hardy at Bitton for the past ten years, and is one of the handsomest evergreen shrubs in the country. Though quite distinct from our Sweet Bay, it is somewhat like it in aspect, and has a powerful odour. It is sometimes called Laurus regalis. As there are many other districts as favourable to its growth as this part of Gloucestershire, we hope it may soon be extensively planted. But what is this delicate odour, like that of the Violet only in one thing—that it lives in the chilly air? It is our old friend the Indian Daphne (D. indica rubra), which is here in perfect health, growing against a sunny wall. It has been in flower throughout the spring. In all the milder parts of the country it would be very desirable to try to establish this fragrant plant out of doors. The specimen in the open air here is much healthier than the sickly individuals so often seen in greenhouses. The Olive thrives here as a wall plant, and our old greenhouse friend, the sweet Mandevilla, grows and flowers well in the open air. Fine specimens of the variegated Yucca aloifolia are in perfect health in the open borders, the only "protection" used being a broad board overhead, to throw off the rain and snow during winter. It is doubtful if this is necessary. Such a remarkable plant and one so unlike anything else we have in the open air, should be tried oftener out of doors.

Although here one often meets with very rare shrubs and climbers, it is for its herbaceous and alpine plants that the garden is most celebrated. Of all private collections of these plants this has been the most enduring, so far as we know. Few of the old collections survived the bedding fever; most of our present famous ones date since that period, but hardy plants in rich variety have been grown here for more than half a century by the Rev. Mr. Ellacombe and his father, the former vicar, who is yet, by the way, cultivating a good collection in Devonshire. Probably some of the tufts we now admire furnished specimens to Sweet more than forty years ago. This, at least, is the case with that mass of the scarce double Narcissus cernuus. The garden has long been celebrated for its Daffodils, many of which are now in blossom; the Paper-white and some of the forms of N. Tazetta being particularly beautiful.

Among the many Irises grown in the garden, I. stylosa deserves special commendation. This is a handsome medium-sized Algerian species, which has the invaluable property of *flowering in winter.* Spring-flowering Irises we have of which we are proud, but this is an acquisition indeed. Inclement as the day and the season are, in addition to the flowers seen in gardens where spring flowers are grown, we may name a few less common as having been in flower on the 12th. This may serve to remind readers fond of early flowers of what to add to their gardens. The quaint and singular Carex Fraseri is in blossom, and so is the equally quaint but fine Podophyllum Emodi; while the large flowers of the beautiful North American Trillium grandiflorum are just on the point of expanding. The modest little Dondia, with its welcome cushions of pale yellow, is outshone by the yellow buds of the dwarf Poppy-like Stylophorum. That curious form of the wood Anemone bracteata is in bloom, of course, and so is the blue wood Anemone, one of the most charming of all spring flowers. It is simply a bluish form of our common British wood Anemone. Larger than the graceful bells of the common but beautiful Snake's-head Fritillary are those of F. latifolia; while the Hutchinsia makes the ground sparkle with snowy-white stars, like its ally Cardamine trifolia. The flowers of Melianthus major are just ready to open, and Rubus spectabilis (a showy, easily-grown, early shrub) is a worthy associate of the flowering Currant. The Blood-root (Sanguinaria), which grows thick as Daisies under the trees in Canada, has for its companion the interesting Twin-leaf (Jeffersonia), also from North America, and our brilliant and brave little early friends, the hardy Cyclamens, are not far away from the Mandrake, with its mournfully-hued blooms. The early but sad-looking Scopolia, the soft Italian and other Squills, are rivalled in beauty by the Triteleias, white and pale blue; and the common annual Claytonia of our gardens is here accompanied by the true "spring beauty" of the American woods (Claytonia virginica), while our own Pasque-flower is almost surpassed in beauty by a dense tuft of the soft purple of Anemone patens, wrapped in down, as it were, to guard it from the chilly breeze; and, finally, the common Crucifers are associated with the cheerful blossoms of the neglected Dentarias.

There is a fine collection of Sun Roses here; the sun must shine, however, before they give us their beauty. Let us hope that this and like collections will sow the seed of a taste for these lovely and brilliant shrubs, now utterly neglected. Styrax officinalis is a great favourite here. The flowers are like those of Orange blossoms, and smell like them. The Californian Diplacus glutinosus is quite hardy here. The Heucheras, being evergreen and handsome in foliage, are employed for filling the corners of beds and places it is desired to furnish in winter. Michauxia campanuloides "sows itself" here, and grows with great vigour. The handsome and distinct Chamæpeuce diacantha also comes up self-sown, and may be seen here and there coming up as the "Scotch Thistle" so often does. The garden is rich in Yuccas, but having given a cut showing a fine group of these in full bloom here, at p. 427, vol. ii., we will now pass them by. On the walls of the garden two very good plants are established, the Cheddar Pink and, more curious still, Agrostemma Flos Jovis. In this position this fine plant, which so often damps off on level ground, thrives well and flowers beautifully. It need hardly be added that the Cheddar Pink is seen to greatest perfection on walls.

Very dwarf shrubs, such as the minute Willows, Cotoneaster congesta, Pernettya arctica, and other very dwarf kinds, are favourites for the rock garden, on which also the little antarctic Beech finds a home. A tuft of Cypripedium pubescens in a border here bears about fifty flowers at a time. There is a good collection of hardy Oxalises, of which O. venusta, O. bipunctata, O. floribunda, O. lobata, O. spectabilis, O. Deppei, and O. lasiandra are a few of the most ornamental kinds. The merits of the species are too little known. There is also a large collection of the herbaceous Pæonies, distinct species, of which it may be useful to record that the earliest is P. cretica and the best P. lobata. British Orchids occur often in the borders. There is not much difficulty in cultivating them, but the Ophrys section do not endure more than two or three years. One of the handsomest evergreens we have seen for a long time is a fine specimen of the interesting Cochineal Oak (Quercus pseudo-cocciferus). This would appear to be a much-neglected tree. Among the Bamboos grown here, Bambusa Ragamouski, a dwarf but fine-leaved and glossy kind, seems the healthiest and the hardiest. The fine and scarce Tropæolum polyphyllum grows like a weed in the border here; so does the Cape Eucomis regia. A Wellingtonia, one of many struck from cuttings by Mr. Ellacombe, is now over 18 feet high. There is a good specimen of this tree here 35 feet high. Other features of this place we shall allude to hereafter.

R.

NOTES OF THE WEEK.

—— It is the fashion to extol the brightly coloured double Peaches, and there are no shrubs more worthy of culture, but the double white kind now speckled all over with the snowiest blooms, seems to us the loveliest of all. Even where the various double Cherries are seen in all their beauty, this should have a choice position.

—— Among the fairest ornaments of the outdoor garden now in bloom are Corydalis nobilis and C. bracteata. The first has the largest head of flowers and the richest colour, the last a beautiful lemon-coloured hue. Both should be multiplied as much as possible for the embellishment of our spring gardens.

—— The most refreshing garden retreat in London just now is the Botanic Gardens in the Regent's Park. This is mainly owing to the sweet open spread of turf, the happy "natural" design, and the bursting into beauty of the deciduous trees and shrubs. A roomy hothouse for tropical, medicinal, and economical plants is being built, and the medical garden in the open air has been changed for the better. The needless prominence given to certain meteorological apparatus causes, however, certain ugly blemishes from important points of view.

—— We were glad to notice some of the best of the alpine Primulas and Androsaces flowering well in the open borders at Kew the other day. The soil in which they grow is nearly paved with smallish stones, which do good in preventing evaporation. Hitherto it has been too much the fashion at Kew to keep the choicer alpine plants in cold frames and pits, where they are little seen and do not thrive so well as when properly treated in the open air.

—— The livid purple flowers of Helleborus caucasicus (var. colchicus), if not among the showiest spring flowers now in bloom, are far from being among the least beautiful. This, among the latest of the "Christmas Roses," well deserves a place in every garden where April flowers are grown. It would do nicely on the margins of clumps and beds of small shrubs.

—— Few textile plants of acknowledged value have had greater difficulties to contend against than Sida retusa, but, thanks to the perseverance of Mr. Kennedy, of Covent Garden, it is now likely to come into the English market. It is a Queensland Mallow-wort, and grows there in dense masses from 4 to 6 feet in height. When once established, it spreads with great rapidity, and it is quite within the mark to say that thousands of tons of it could be cut at any time, provided sufficient remuneration was offered for the work. Its fibre, which is of great strength and beauty, is worth from £25 to £30 a ton.

—— Dr. F. Arnold Lees and Mr. T. B. Blow propose, says *Nature*, to form a club under the name of the Botanical Locality Record Club, the object of which shall be to collect and keep a record of the exact localities of all the rarer British plants, with the dates of the latest observance of each, to be published yearly at the end of each season. The yearly report, containing not only a detailed list of the localities, but also a geographical summary of each year's work, is to be published and distributed only to members of the club, and to certain learned societies; to the former a subscription of 5s. will be charged. The names of botanists desiring to become members are to be forwarded to Mr. T. B. Blow, Welwyn, Hertfordshire.

—— We are indebted to Mr. Luscombe, of Combe Royal, Kingsbridge, for an opportunity of inspecting many lovely heads of Rhododendron blooms, that have been sent to us as illustrations of the way in which such plants flower out of doors at this season in that part of Devon. Foremost amongst them may be mentioned the Sikkim species R. Thomsoni, a beautiful kind with obovate leaves, glossy deep green above, and silvery beneath, and with waxy purplish crimson flowers not unlike those of Lapageria rosea. With this came another Sikkim species bearing a compact truss of medium sized purplish-lilac flowers; another species from the same district bore a profusion of blooms of the most brilliant crimson. Others again varied in colour, from the brightest crimson scarlet to pure white, the latter in one instance being deliciously sweet scented. Altogether the collection was one of great interest and beauty.

—— The new council of the Royal Horticultural Society has entered into the following temporary arrangement with the Exhibition Commissioners:—The fellows and their friends to retain the private enjoyment of the gardens and conservatory. The Exhibition visitors not to enter without the usual payment of the day. The lower quadrant arcades to be for the fellows and their friends only. The upper story of quadrant arcades, with a communication across the back of the conservatory, will be entirely fenced off for the Exhibition visitors. The commissioners to open forthwith, at their own expense, a new entrance for the society at the south-west side, and to allow the society to use, without payment, until the 1st April, 1874, the north-western and north-eastern entrances in Prince's Gate and Queen's Gate respectively. The society to permit the Exhibition visitors, until 1st November, 1873, a passage way across the gardens, so as not to interfere with the privacy and freedom of the fellows and their friends. The fellows and their friends and debenture-holders to have a joint right with the Exhibition visitors of using the central arcades. The commissioners to pay £1,000 in cash before November, 1873, to the Royal Horticultural Society.

—— The Manley Hall collection of plants, just sold, realised the sum of £5,586. The Orchids alone fetched £4,361, the rest being for miscellaneous stove and greenhouse plants. The entire number of lots sold was 1,623.

—— French sailors are said to have introduced a new luxury into this country. Garden snails, already prepared and cooked, are now being publicly sold in the streets of Gloucester, and they appear to find ready customers.

—— On light warm soils the lovely Lithospermum prostratum is now conspicuous for its beauty, even among the showily-beautiful flowers of spring. The blossoms, however, do not come out so densely as they do in early summer.

—— A charming double blossomed variety of the common garden Anemone has just been sent to us by the Rev. Mr. Ellacombe, of Bitton. Its colour is scarlet of the most brilliant kind, and it is as double as a Pompone Chrysanthemum.

—— A good tuft of the rare Puschkinia scilloides, a beautiful hardy bulb, is now blooming finely in the open grounds at Kew. This plant grows about 6 inches high, producing racemes of delicate blue and white flowers, and should have a place in all collections of hardy bulbs, either in borders or on rockwork.

—— Some noble specimens of hardy Magnolias are now, and have been for some time past, in great beauty at Messrs. Rollisson's Nursery at Tooting. One old specimen stretches its arms over the Tooting road, and scatters its great white leathery petals over the footway.

—— The rare and remarkable Saxifraga peltata, quite a giant among Saxifrages, is now in flower in the Stansted Park Nursery, Forest Hill. It belongs to the large-foliaged section, the leaves when fully developed being as large as those of Rhubarb. It is, therefore, as remarkable for its fine foliage as for its flowers, which are rose-coloured.

—— At a sale of Orchids imported from New Granada and the East Indies, which took place at Stevens' the other day, several lots of the new Masdevallia elephanticeps were sold at from £3 10s. to £6 12s. 6d. per lot. This species, which is said to have magnificent flowers, is very difficult to import, the few lots offered on this occasion being all that reached England alive out of a thousand that were shipped. Single clumps of Masdevallia polyantha, sold at the same time, fetched from £3 5s. to £4 a-piece; some of M. ignea as much as £6 6s.; and a few lots of Odontoglossum Blandianum from £2 5s. to £3. Clumps of Utricularia montana realised about two guineas each; others of Oncidium cucullatum fetched from £2 5s. to £2 10s. The total amount realised for 588 lots was £823.

—— We have received from Messrs. E. G. Henderson & Son coloured illustrations of some of their new bedding plants. They consist of Sedum acre elegans, a yellow variegated little gem, and Golden Fleece Thyme, which promises to be one of our most popular bedding plants, being dwarf and compact, and of a striking colour; also Cineraria ceratophylla, a compact, very white, beautifully laciniated-leaved plant, and two kinds of Alternantheras, viz., A. amœna spectabilis, a brilliantly-coloured, robust kind, and A. paronychioides major, also a strong-growing and highly-coloured variety. The most striking plant of all, however, is Lobelia Mazarine Gem, a moderately dwarf-growing, compact kind, with large and showy, intense blue flowers, each having a conspicuous white eye, and produced in the greatest profusion.

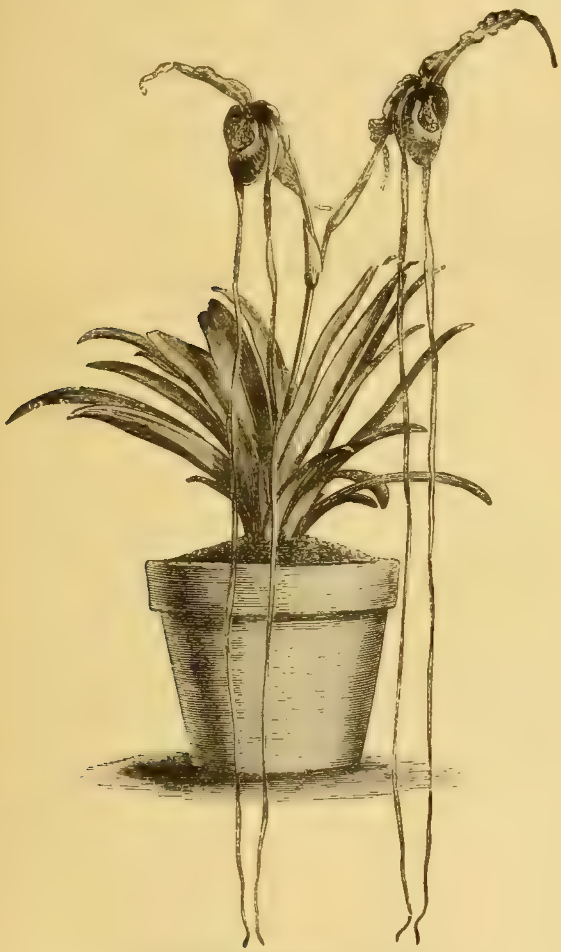
—— The first idea of raising Briar stocks from seed has been claimed by M. Rivière for M. Guillot, a Rose grower at Lyons, who has raised his stocks in this way for the last twenty years. To M. Guillot, also, belongs the credit of ex-cogitating a means of preventing his Briars from producing suckers. Reflecting that suckers are nothing more than subterranean branches, which, like all other branches, must issue from the axil of a leaf, he considered that by inserting the bud on the part of the stem below the axils of the lowest or cotyledonous leaves (which are usually under the surface of the soil) he would deprive the stock of all power to produce suckers in future. In practice, M. Guillot simply removes the soil from about the lower part of the stock and inserts the bud close to the neck. The result is that his Roses seldom or never show suckers, and if one chances to appear, it is sure to be from the buried part of the Rose graft, and not from the Briar stock.

THE INDOOR GARDEN.

LONG-TAILED LADY'S SLIPPER.

(CYPRIPEDIUM CAUDATUM.)

This is not only one of the most remarkable of Lady's Slippers, but also one of the most singular plants in cultivation. Its narrow petals are but an inch or two long when the flower-buds first expand, but they gradually extend until, in ten or twelve days, their length varies from 18 inches to nearly a yard! This remarkable species is a native of Bolivia, and a variety of it is also found on the Peruvian Andes. Its foliage is about a foot in length and of a bright green colour. The flowers are produced two and three together on a stout scape from a foot to 16 inches in height; the sepals are of a pale yellowish green, streaked with dark green, while the lip, which is large and pouch-shaped, is of a yellow and rosy-purple colour, the interior being white spotted with clear purple. The petals are of a yellowish green colour, striped with reddish-purple. It grows freely in an open well drained compost of turfy loam and peat, surfaced with fresh sphagnum. Well-grown plants of it flower regularly every year, and last a month or six weeks in perfection. A specimen of this plant in Mr. Salt's collection at Ferniehurst has borne flowers with tails 32 inches in length. This, like its congener C. villosum, is a fresh-looking plant when not in flower, and does well in an intermediate house. The peculiar long-tailed Uropedium Lindeni is in all probability nothing more than an abnormal form of this species, from which it differs in having the saccate lip transformed into an elongated petaloid appendage. In habit the two plants are identical. F. W. B.



Cypripedium (Selenipedium) caudatum.

THE MIMULUS.

The large-flowering varieties of Mimulus, having yellow flowers variously spotted and blotched with dark, make charming plants for the decoration of the greenhouse and conservatory when grown in pots. There are also newer varieties, giving different shades of ground-colour, more or less, however, retaining the original yellow; but, instead of being formally blotched, they are densely spotted or mottled, or handsomely pencilled, in the form of stripes and markings. About ten years ago Messrs. Veitch and Sons introduced from Chili Mimulus cupreus, a dwarf, hardy, and very pretty border plant, intermediate in size between M. luteus and M. moschatus, and having a compact growth more rigid in the habit than the common kinds. This was too small in itself to be of much use for pot culture, much less for growth in the open air; but it was invaluable for cross-breeding purposes, and the large-flowering forms of M. luteus being crossed with M. cupreus, and *vice versâ*, intermediate types were the result, having larger flowers than the imported species, marked in a similar manner. These received various specific names, such as M. maculosus, M. tigrinus, and so on, and have proved very useful and effective flowering plants. These, again, fertilised with M. cupreus, produced flowers diversely marked, and having more of that bronzy-red peculiar to the Chilian species; the colour and markings are extremely novel, the palate of the flowers being in some instances quite richly spotted. Some of the seedling forms lately obtained showed a tendency to produce one flower issuing from the mouth of the other, like the well-known hose-in-hose Polyanthus. This characteristic, by means of careful selection, became fixed and permanent; and we have now a strain of "semi-duplex" flowers, as they are termed. They are certainly curious, but not so attractive as the single flowers. Some seed sown early in the spring will give an abundance of plants for the summer. In a fine sandy soil and a temperature of 60° the seedling plants will soon appear above ground. The Mimulus is a plant of such easy growth that it simply wants potting in rich light soil to have plants a good size for blooming in the greenhouse or window of a sitting room, or planted out in the open ground. The plants are somewhat fragile, and a heavy shower of rain soon beats them down; but an hour or two of sunshine remedies matters with surprising quickness, and soon the plants are aglow with gay blossoms. Any strongly marked and attractive variety it may seem desirable to preserve can be propagated by offsets from the roots, or by cuttings. The old-fashioned plan of gradually withholding water when the plants had done flowering, and suffering them to dry off, and then laying them by all the winter till they begin to grow in spring, and could be divided at the roots, is as applicable now as it was fifty years ago. It is also both an easy and a reliable process. There are representatives of this gay genus yet well worthy of a place in our plant houses; and the tendency of the present time is to restore the Mimulus, among other old-fashioned plants, to the popular favour it so richly deserves. Out of doors the varieties of Mimulus best enjoy the margin of the Rhododendron beds, or any slightly shaded position where there is a light moist soil. The Musk plant (M. moschatus) cannot and never will be spared. It is as much interwoven with our home life as any other plant; and at exhibitions of cottagers' and window plants generally, the Musk is always seen, invariably nicely grown and tenderly cared for. Suitable alike for cultivation in the open air or in pots, it is when grown in the latter that it is seen best. It is fond of a rich soil, plenty of water, and an abundance of air; under these simple conditions, excellent specimens can be grown even in the window of a sitting room. Some cottagers in the midland districts grow the Musk remarkably well by planting it at the bottom of a pot, and as the branches grow filling up with rich soil, which causes the growing shoots to throw out fresh supplies of rootlets. Selection of old large-flowering spotted varieties:—Beauty, Etna, C. W. Cowan, Dr. Greville, Clara, Grand Sultan, Hugh Adair, Gaiety, Madame Miellez, The Bride, Sunset, and Nymph. Selection of the Maculosus strain:—Albus elegantissimus, Aurantiacus splendens, Festoon, Gazelle, Inimitable, Leopardinus, Meteor, Orientalis, Sylva, and Vulcan. Quo.

WATERING PLANTS.*

Of the many operations the gardener has to perform in the cultivation of plants whose roots are confined in the limits of an ordinary pot or similar appliance, there is one that demands his daily and unremitting attention—namely, the application of water—the proper performance of which I may term the sheet anchor of successful plant growing. Let the soil be of the best possible description, according to the requirements of any given variety or species of plant; let the temperature, the light, ventilation, and other conditions be all that is requisite,—if it is not properly treated in respect to water, disappointment is certain speedily to follow. Yet there are numbers to be found who form a different opinion, and who seem to think that if the soil in which the roots are placed is of the right description, all ought to go on satisfactorily. How often do we hear the question put, in reference to some particular plant, In what is it potted? And when the information is acquired we see the look of satisfaction, as much as to say, "That is the secret." I do not ignore the necessity of suitable soil, but simply put it as a secondary consideration to the all-important operation of watering; and what renders the matter more complicated is the difficulty of giving either precise verbal or written directions upon the subject.

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* Read by Mr. Baines, at a horticultural meeting in Liverpool.

Taken collectively, the plants that are found in the lower regions of tropical countries—such as are met with in our stoves and hot-houses—are not impatient of slight excesses of moisture, being subject to such in their native countries. The different varieties of Dipladenia, however, are an exception, some of which absolutely require a drier state of soil than any other blooming plants in cultivation. It is to the plants from the more temperate regions of the Cape and New Holland that I would more particularly allude—to the Aphelexes, Hedaromas, Boronias, Ericas, Leschenaultias, Pimeleas, Gompholobiums, Acrophyllums, Dracophyllums, &c., &c. It is generally admitted that the successful cultivation of these plants taxes the gardener's skill and attention to a much greater extent than anything else which comes under his charge, for many of them require years of close and unremitting attention to grow them into specimens, and a single day's neglect is often irreparable. What makes their culture more difficult is that almost every variety in each species requires somewhat different treatment. Hence it is that, amongst those who have been the most successful in their culture, there are few who have been able to grow the whole group well; and as all thrive in nearly the same description of soil, with a slight difference in temperature, I conclude that the variable success of cultivators with these plants generally arises from the different conditions observed as to water. With these, as with other plants, it is necessary when water is given to use sufficient to moisten all the soil. But in this question of water the great difficulty is to arrive at what degree of dryness the soil ought to be in before water is given. If the same conditions in this respect would answer for all, there would not be much difficulty; but many of the varieties, even of the same species, of the above and other families of plants, require wide differences in treatment. For instance, if some were allowed to get dry before water is given, as it is absolutely necessary for others to become, disease or death would soon follow. This elicits the fact that knowledge of when and how to water can only be acquired by long and observant study. There is one moderately safe rule to go by—plants with fine roots, small leaves, and very hard wood, are comparatively slow growers, and never ought to be watered until the soil has got to that state in which it would not be safe longer to withhold it. If plants of this description ever flag in the least they rarely recover; therefore he who would be successful must be ever vigilant.

There is yet one other consideration, a most important one, bearing upon this subject. It is involved in the question, What are the conditions as to moisture, atmospheric and otherwise, under which any given plant is found in its native habitat? And this points to the necessity of gardeners studying the geographical distribution of the vegetable kingdom. Taken in a general sense, if there is one subject more than any other with which gardeners ought to be thoroughly conversant, it is this. Even in the case of the most common plant such knowledge will be an assistance; for although it is possible to grow a plant through following the routine of blind practice, still he is much more likely to succeed who is properly conversant with the natural conditions under which the plant is found in its native country. This has especial reference to the subject we have under consideration. To say that a plant comes from India, South America, or elsewhere, is to say very little, inasmuch as the altitude at which a plant is found in any country makes a wonderful difference as regards its requirements, especially in the matter of water. For although it is possible, and often necessary in some measure, to depart from the conditions under which a plant is found in its native country, still, in respect to water, its requirements ever remain much the same, and ever must, unless its nature were to become changed under cultivation, which I hold to be, to any great extent, impossible. By way of illustration, I may mention the difficulty of fruiting the Apricot in pots experienced by those who first practised that system of fruit culture. The plant is indigenous to Armenia, near the foot of Mount Ararat, and is continually, during the spring and blooming season, under the influence of the cool moist atmosphere wafted from the perpetual snow-clad summit of the neighbouring mount; and consequently, when submitted to culture under glass, the atmosphere that suited the Peach and Nectarine was too dry for the Apricot, and the cause of failure was therefore no mystery. Again, take for example those beautiful Orchids found in the hill districts of India, such, for instance, as the lovely Dendrobium Devonianum, from the Khasian Hills, and Cœlogyne cristata, from the high regions of Nepaul. These and others from the same and similar elevated districts require double the quantity of water necessary for plants found nearer the sea-level. Collectors of late years give us much more detailed accounts as to the conditions under which the plants they have discovered are found than used to be the case. Such, and all other available information on the subject, ought to be well considered by all who would wish to succeed in gardening matters at the present day; for the man who has his mind well stored with such knowledge has an immeasurable advantage over one who is ignorant on the subject. This appears the more obvious when we consider what the gardener at the present day is expected to be able to perform. We have in Britain over 30,000 species of plants, native and exotic, the great majority, of course, possessing nothing more than botanical interest; but among them are thousands which the gardener is expected to be able to grow successfully. I admit that it is possible for a man to grow any particular plant well without possessing the knowledge in question, yet, as I have stated, he is much more likely to succeed with the help of such knowledge. In fact, it may be said, that with a general knowledge of vegetable physiology, the gardener's every-day operations are rendered more certain as to their results than they otherwise could be, as it enables him to excercise those great essentials to success, the ability to adapt himself and his plants to circumstances. From what I have advanced it will be seen that, in successful plant-culture, I consider the skilful performance of the operation of watering of equal importance with all other operations collectively; and I consider the careful study of the actual condition under which plants are found in their native habitats as furnishing the only safe rule for our guidance in such matters.

TEA ROSE CULTURE IN WINTER.

Probably few of our readers are aware of the great extent to which Tea Roses are grown in America in winter, to supply the immense demand for them in bouquets and in every kind of indoor decoration. We failed to find a nursery in more than one large city in America, but never visited one where there was not an establishment for the growth of cut flowers, chiefly Roses. In some of the best establishments we saw the Tea Roses planted out and treated much as Vines or Peaches are treated in a good forcing garden in England. The following article in the *Agriculturist*, written by Mr. Peter Henderson, the largest grower near New York, gives the most improved mode of culture:—

Recent experiments on a large scale have shown that the old system of growing the plants in pots or tubs is not so good as to plant them out on a bench or border prepared specially for the purpose. Last season, in August, we planted out a bed 500 feet in length by 8 in width, with large plants that had been forced in pots the previous season. They were then covered with mildew, and were a sorry-looking lot, but by the middle of September the mildew had entirely disappeared, and we managed to keep them in vigorous health, entirely clear from mildew or other disease, until the following June. The bed in which they are planted is a boarded bench or table, having only 7 or 8 inches depth of soil. This, however, will not be enough to carry them through more than another season, and it will be necessary to increase the depth of soil by lowering this temporary bench to a bed prepared under it. We find that the size of the buds is much increased when the Roses are planted in solid beds. Acting on this knowledge, we are this season erecting a structure 40 feet by 100 feet, and have prepared the Rose-beds as follows: We have run a brick wall around the 8-foot-wide beds 20 inches in height, with two rows of "pigeon-holes" at the bottom, for the double purpose of giving perfect drainage and admitting air to the roots. The soil used is equal parts sod, scrapings from a paved street, and well-rotted cow-manure, all thoroughly mixed together. The bottom of the bed is rounded slightly from the centre to the sides, so that the surplus water may pass off freely; and to prevent the roots from striking down into the cold subsoil we have cemented the bottom of the bed. In fact, the manner of preparation of the bed or border is exactly similar to that for a Vinery border, except that our Rose borders are inside the house, and elevated 20 inches above the walks. I have given the composition of the soil we are using, and which we know to be excellent, but where street clearings are not attainable, two parts sod and one manure will probably do quite as well. We are planting out our new houses exclusively with Safranot (deep fawn colour), except at each pillar we plant alternately a Maréchal Niel (golden yellow) and a Climbing Agrippina (dark crimson). The Safrano will be the main crop, as we find it so far the most profitable and satisfactory. The houses now erecting are span-roofed, equal on each side, and facing east and west. This style was necessary from the position in which we were compelled to place them, but for choice we still prefer the half-span style. There is a general impression that the glass should be stripped from the Rose beds in summer. This, we believe, is not only useless but injurious. In the vicinity of Boston, where Roses are grown better perhaps than in any other part of the country, the Rose houses have nearly all fixed roofs, except certain sashes for ventilation, and the plants, which in many of them have been growing for three or four years, are now immense bushes in the most perfect health. But to keep them in health of course requires work. The plants must be syringed freely twice a day, and the paths freely watered, to keep a moist atmosphere in the house. To modify the sun's rays, the glass should be painted with raw oil from June 1st to September 1st. Oil we find to make the best shading for this purpose, whitewash darkening too much. In painting the glass with oil we use a sponge attached to a stick, and remove it by sponging it off with boiling water. The leading varieties grown have been Safrano and Bon Silene, with lesser quantities of Lamarque, Maréchal Niel, and Isabella Sprunt, as few others are sufficiently prolific flowerers to justify their being grown for buds in winter. There has been a want of a deep crimson shade, which I am in hopes the Climbing Agrippina will supply. The form and colouring of the bud is splendid, but we have not yet had an opportunity of testing its flowering qualities. The temperature requires to be raised somewhat to suit the nature of the different sorts; for example, if Maréchal Niel and Bon Silene and Safrano and Climbing Agrippina are to be grown in the same house, and there is any difference in the temperature of one end over the other, we would plant the first two sorts in the hottest end, as they require a temperature of 65° at night, while the other two will do well at 60°.

ACACIA RICEANA.

This beautiful species of Acacia, which has on several occasions been alluded to in The Garden, has a habit of growth something like that of a Weeping Willow. Its deep green foliage, its long whip-like pendent branches clothed with golden flowers, the facility with which it can be trained over columns and arches, and the length of time during which it remains in flower, render it one of the most desirable acquisitions for a conservatory. A fine bush of it grew in the great curvilinear glass-house at Chiswick, before it was converted into a vinery. The seeds should be soaked in warm water twenty-four hours before sowing, otherwise they will be a long time germinating. A fine plant of it is now cóming into flower in the winter garden at Kew.

Acacia Riceana.

Jointing Hot-water Pipes (see p. 302).—India-rubber joints for hot-water pipes are but of little use; they only last about two years. I never use them. If the pressure is not very great, red and white lead mixed, and yarn, make the best joints. If the pressure is great, iron cement properly mixed is best.—D.

THE FLOWER GARDEN.

NEW, RARE, OR NEGLECTED ALPINE PLANTS.

(*Continued from p.* 297.)

Achillea Aizoon (Anthemis Aizoon) Everlasting Achillea.—A beautiful silvery-leaved plant from the sub-alpine districts of Northern Greece, 4 to 7 inches high, with pure white flowers (resembling perfectly white Daisies), which appear early in summer. The leaves are tongue-shaped or lance-shaped, and covered with white down, the lower ones crowded. This is a very neat and distinct-looking plant, and easy of cultivation in light soil on rock-work or in warm borders.

Brodiæa coccinea (Crimson-flowered Brodiæa).—A very beautiful Californian bulbous plant of the Lily family, with a flower-scape from 2 to 3 feet in height, bearing in summer a dense terminal umbel of rich magenta-crimson pendent tubular flowers; each flower being from $1\frac{1}{2}$ to 2 inches long, yellow at the extremity, and with reflexed green tips; the umbel consisting of five to twenty blossoms according to the vigour of the plant. The leaves are linear, channeled, lax, and nearly as long as the flower-scape. This very charming plant should be planted in a warm position in the rock-garden or choice mixed border among select plants, and in warm sandy loam.

Claytonia virginica (Spring Beauty).—A handsome American plant of the Portulacaceæ or Purslane family, sending up in early spring simple stems bearing a pair of opposite linear lance-shaped leaves from 3 to 6 inches long, and a loose raceme of pretty rose-coloured flowers marked with deepes veins, which, unlike the flowers of most of the species of thir family, remain open for more than one day. Suited for the rock-garden or borders, in loam and leaf-mould.

Daphne striata (Striated Daphne).—A sweet-scented hardy trailing species, resembling *D. Cneorum,* but somewhat more shrubby. It forms dense, twiggy, spreading masses, 1 to 3 feet across, which, in June and July, are covered with a profusion of rosy-purple, carnation-scented, tubular flowers, growing in clusters. The trailing and freely-spreading habit of this plant recommend it as an excellent subject for covering bare parts of rock-work. A native of France.

Dianthus Fischeri (Fischer's Dianthus).—A very beautiful, and as yet rare, species from Russia, 7 to 10 inches high; blooms in summer; flowers numerous, of a light rose-colour, with the petals much cut or feathery at the edges, in closely-set fascicles; leaves lance-shaped, stiff, with a single vein on the upper side. Deserves a good position in the rock-garden, in moist, sandy, or gritty loam.

Draba ciliata (Eye-lashed Whitlow Grass).—This is really a good white Draba, not unlike a diminutive specimen of *Arabis albida.* The leaves are broadly spoon-shaped, sparsely but distinctly ciliated, in loose rosettes. Flowers in early spring; pure white, about eight on a stem; the whole plant when in bloom not being more than 2 inches high. Mountains of Croatia and Carniola.

Epilobium obcordatum (Dwarf Californian Willow Herb).—This, which is by far the finest of the alpine Willow-herbs, has been recently introduced from the Rocky Mountains of North America. It forms handsome little shrub-like tufts, 3 or 4 inches high, and flowers late in summer, producing large rosy-crimson blossoms, resembling those of *Clarkia integripetala.* The leaves are small, smooth, and roundish, closely set on the erect stems, and the plant, even when not in flower, has a remarkably neat and distinct appearance from the foliage alone. Coming from the summit of the Sierra Nevada, it is perfectly hardy, and will prove one of the most valuable and attractive of rock-plants. It is also an exquisite pot-plant, and thrives to perfection in ordinary peaty loam.

Erythronium giganteum (Gigantic Dog's-tooth Violet).—A very large species from N. America, growing from 9 to 18 inches high, and bearing from three to ten large flowers on one stalk, arranged in a branching and somewhat confluent spike, each flower 3 inches or more across, and usually of a creamy white, shaded with delicate pink or purple. There is great variety, however, in the colour. In different districts plants are found with pure white, with light lemon-yellow, and with clear red purple flowers. The plant continues in bloom through February, March, and April, and the flowers are very handsome, the petals being broad and well expanded.

The leaves are blotched and marbled with purplish-brown. Same culture and positions as for the common Dog's-tooth Violet.

Edraianthus pumilio (Silvery Harebell).—A singularly pretty and minute rock-plant, with foliage resembling that of a dwarf tufted Pink, hoary and silvery, with adpressed hairs on the upper side, very finely ciliated at the edges, the under sides quite smooth, shining, and dark green. The flowers, about an inch long, are almost seated among the leaves (the whole plant not being more than 2 inches high), of a pure purplish blue, vasiform, cut into segments for about one-third of their length, and opening in May. Croatia. A gem for the rock-garden, thriving in moist loam with abundance of sand or grit, and well suited for association with the alpine Forget-me-not and other dwarf and choice May-flowering rock-plants. Easily raised from seed.

Galanthus Imperati (Imperati's Snowdrop).—This is a very large species of Snowdrop, found on mountains in that part of Italy which was lately called the Kingdom of Naples. It resembles our common Snowdrop, but is double the size in all its parts, and flowers later; one of the external divisions of the flower, also, is larger than the others. The leaves are very broad and long, but not plicate at the margin, like those of the great Crimean Snowdrop, *G. plicatus*. It flowers ten days to a fortnight earlier than the latter. This very desirable species is at present scarce in this country; but we have no doubt that a demand for it would stimulate our nurserymen to provide themselves with a supply.

Globularia trichosantha (Hair-flowered Globularia).—This species is distinguished by its glaucescent foliage and finely-divided petals. It grows from 6 to 8 inches high, and flowers in summer, producing large sky-blue many-flowered heads, very similar in shape to those of *Erigeron alpinus*. The flower-stems are herbaceous and leafy, and bear one flower-head each. The whole plant is very smooth and glaucescent. Native of Asia Minor. Same positions and culture as for *G. nana*.

Iberis jucunda (Glaucous Iberis).—A little novelty in leaf and flower, from the mountains of Asia Minor; about two and a half inches high. The leaves are ob-lanceolate, about three quarters of an inch long by one-eighth of an inch broad, somewhat glaucous, much attenuated at the base, and with a minute point at the apex. The flowers are in small clusters, and of a pleasing flesh-colour, prettily veined with rose in early summer. This does not as yet appear to possess the rude vigour of our common evergreen Iberises, but it is none the less valuable as a rock-plant for being unlike them, and is fitted for association with a dwarfer and more select set of subjects. Should be planted on warm and sunny parts of the rock-garden, in well-drained sandy loam. Increased by cuttings or seeds. Syn., *Æthionema coridifolium*.

Iris iberica (Iberian Iris).—A remarkably striking Iris, reminding one of *I. susiana*, but quite distinct in leaf and flower. Grows from 4 to 16 inches high, and blooms in summer, producing solitary flowers, the external divisions of which are of a dull red, marked with tawny streaks, and an oval, black, purple-edged spot in the middle, while the internal divisions are of a very pale purple, with streaks of a darker hue, and veined and spotted about the base. The leaves are linear, arched, almost curled, and folded lengthwise.

Lewisia rediviva (Bitter Root Plant).—A very singular and ornamental plant, allied to the Mesembryanthemums, resembling a very fleshy-leaved Thrift, and forming rosettes of leaves, each 2 to 3 inches long, on a thick, woody, branching root-stalk. After the leaves attain their full growth in spring or early summer, a profusion of beautiful flowers issues from the rosettes nearly hiding the whole plant. Each blossom is from 3 to 4 inches across, and consists of eight or twelve shaded pink petals, the centre being nearly white and the tips rose-colour, the whole having a very pleasing satiny lustre. The calyx is elegantly veined with red, and is of a consistency like paper. The flowers open only during sunshine. Native of the west parts of N. America, particularly in Washington Territory and Oregon. Should have a warm position in the rock-garden, in dryish soil.

Lithospermum canescens (Hoary Lithospermum).—A species distinguished by its hoary appearance, the whole plant being covered with soft white hairs. Grows from 6 to 15 inches high, and flowers in May, producing large, sessile, salver-shaped flowers, of a deep orange-yellow colour. The leaves are narrowly oblong, obtuse, more or less downy beneath, and roughish above with close adpressed hairs. Northern States of America. Suited for the rock-work or borders, in sandy or peaty loam and grit.

(To be continued.)

Arundo Donax.—This plant is usually killed back to the ground with me, and I suppose such is the common experience, but this winter the old stems have survived. Mere accident prevented their removal, and a week or two ago I discovered, to my astonishment, that they were pushing at every joint, from the base upwards within a few inches of the summit. Now I want to know if any of your readers can tell me whether it will not be worth while to allow these old stems to remain, seeing that the development of the laterals must produce a novel effect. Or supposing that it should be deemed desirable to remove them, would it not afford an easy mode of propagating the plant, either by laying the entire stem in the ground or by dividing it into short lengths or single joints. I may perhaps be allowed to add that not only has the Arundo preserved its old culms, but even Aralia papyrifera has stood unscathed, so far as the stems are concerned; and Colquhounia coccinea, a somewhat rare Asiatic Labiate, also stands uninjured. On the other hand, notwithstanding their reputed hardy character, Sparaxis pulcherrima and Iris iberica have suffered greatly, and the former is apparently dead.—East Anglian.

Leptosyne maritima.—We have received a beautiful bloom of this plant from Mr. Thompson, of Tavern Street, Ipswich, developed of course under glass, on a plant between 3 and 4 feet high, growing in a 48-sized pot. It seems to be a plant of the easiest growth, and promises to bloom in long succession. It will make a noble plant for borders out-of-doors, where its large bright yellow blossoms cannot fail to find admirers, and where it will prove a really splendid addition to our already extensive list of ornamental composites. It is a succulent, smooth-branched plant, from 2 to 3 feet high in suitable soil, with alternate bipinnately divided leaves, with linear entire segments, nearly all borne towards the base of the stems, which, as well as the branches, terminate in a naked peduncle from 6 to 9 inches in length, bearing a very showy flower-head of a golden yellow, 3 inches, or even more, in diameter, the ray-florets being from fifteen to twenty in number. It is a native of the south of California, but seedlings have been raised by Mr. Thompson at a temperature which warrants him in affirming that it will prove of the easiest cultivation as a half-hardy annual. With protection the root is probably perennial. Being of vigorous habit, the seedlings should be pricked off early, and allowed ample pot room prior to turning out. Agarista calliopsidea is sometimes sold under the present name, but the seeds of the Leptosyne maritima are distinguishable at a glance from those of the Agarista, by having no pappus, and by being perfectly smooth. The seeds of Agarista are densely villous with very long hairs, and have a pappus of two long chaffy scales; they are also smaller than those of the former plant. Seed has been received by Mr. Thompson under the name of Leptosyne maritima, variety gigantea, and it is possible that a small quantity may be offered under that name, but he has the best authority, that of Dr. Asa Gray, for stating that the supposed variety is, in fact, nothing but the typical L. maritima.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Cerinthe aspera.—This, of which I send you some blooms, is with me a lovely spring-flowering biennial. I winter it in a frame.—H. Harpur Crewe.

Helleborus argutifolius.—This is the finest of all the Hellebores, as regards foliage. It is now in flower at Bitton, forming a mass between 3 and 4 feet high. After flowering it is cut down. During the summer it forms a noble tuft of fine leaves, and is very effective indeed in this form. It is said to be a variety of H. lividus.

New Zealand Flax (see p. 257).—I was enquiring the other day, on being shown a damask table-cloth, made from the fibre of this flax, whether it would answer to grow the plant in England, and I was informed that, while the fibre from the plant grown in New Zealand would cut your hand before you could break it, that from plants grown in Jersey, where they seemed to flourish, was rotten and worthless. It requires five tons weight of leaves to produce one ton of fibre.—W. T. P.

Drooping Plants for Rockwork.—We have a newly-made pond in the centre of our carriage drive near the house. Can you recommend me any plants that will grow quickly over its rockwork edges, and also over a modern "Druid's seat" that has been erected on a cliff commanding a splendid view of the lovely surrounding country?—B. F., *near Shanklin, Isle of Wight*. [The following are the best plants for your purpose, viz.: Various kinds of Aubrietia and Arabis, Coronilla varia, Dryas octopetala, Genista prostrata, perennial kinds of Iberis, Lithospermum prostratum, common Moneywort, Salix reticulata, Saponaria ocymoides, some of the mossy kinds of Saxifrage, Thymus lanuginosus and Vincas in variety.]

THE LIBRARY.

THE TROPICAL WORLD.*

This is one of the most readable books that have fallen into our hands for some time, and we do not know any single volume that affords so good and comprehensive an account of the inhabitants and the leading natural features of the torrid zone. The various tribes of men, the animals, plants, insects, &c., are all successively described in the most pleasing manner, and in each department the illustrations are numerous and well chosen. Of the *matériel* of the volume it is sufficient to say that Messrs. Longmans & Co. are the publishers, and that in its paper, typography, &c., it well sustains the reputation of that eminent firm. We should find it difficult to select a more interesting and valuable book-present for our younger friends, while we are convinced that not a few of the older ones would be highly gratified, as we ourselves have been, by its perusal. We append two short extracts, with their appropriate illustrations:—

THE BOTTLE TREE.

The trunk of several tropical trees offers the remarkable peculiarity of bulging out in the middle like a barrel. In the Brazilian forests, the Pao Barrigudo (Chorisia ventricosa) arrests the attention of every traveller by its odd ventricose shape, nearly half as broad in the centre as long, and gradually tapering towards the bottom and the top, whence spring a few thin and scanty branches. It is only by seeing great numbers of these trees, all with their character more or lest palpable, that one can believe it is not an accidental circumstance in the individual tree, instead of being truly characteristic of the species.

The Delabechea, or Bottle tree, discovered by Mr. Mitchell in tropical Australia, has the same lumpish mode of growth. Its wood is of so loose a texture that, when boiling water is poured over its shavings, a clear jelly is formed, and becomes a thick viscid mass.

THE MANGROVES.

The roots of the Mangroves, which in the tropical zone are found fringing the shores of the sea, or the mouths of rivers, wherever the reflux of the tide exposes a broad belt of alluvial soil, are admirably adapted for securing a footing on the unstable brink of the ocean. The growth of these sea-water-loving trees (Rhizophora gymnorrhiza, R. Mangle) is equally peculiar and picturesque. The seeds germinate on the branches, and, increasing to a considerable length, finally fall down into the mud, where they stick, with their sharp point buried, and soon take root. As the young Mangrove grows upwards, pendulous roots issue from the trunk and low branches, and ultimately strike into the muddy ground, where they increase to the thickness of a man's leg; so that the whole has the appearance of a complicated series of loops and arches, from 5 to 10 feet high, supporting the body of the tree like so many artificial stakes. It may easily be imagined what dense and inextricable thickets, what incomparable breakwaters, plants like these—through whose mazes even the light-footed Indian can only penetrate by stepping from root to root—are capable of forming. Their influence in promoting the growth of land is very great, and in course of time they advance over the shallow borders of the ocean. Their matted roots stem the flow of the waters, and, retaining the earthy particles that sink to the bottom between them, gradually raise the level of the soil. As the new formation progresses, thousands of seeds begin to germinate upon its muddy foundation, thousands of cables descend, still farther to consolidate it; and thus foot by foot, year after year, the Mangroves extend their empire and encroach upon the maritime domains. The enormous deltas of many tropical rivers partly owe their immense development to the unceasing expansion of these littoral woods; and their influence should by no means be overlooked by the geologist when describing the ancient and eternal strife between land and ocean. When the waters retire from under the tangled arcades of the Mangroves, the black mud, which forms the congenial soil of these plants, appears teeming with a boundless variety of life. It absolutely swarms with the lower marine animals, with myriads of holothurias, annelides, sea-urchins, entomostraca, paguri, and crabs, whose often brilliantly-coloured carapaces form a strong contrast to the black ooze in which they are seen to crawl about. Life clings even to the roots and branches bathed by the rising floods; for they are found covered with mussels, barnacles, and oysters, which thus have the appearance of growing upon trees, and pass one-half of their existence under water, the other in the sultry atmosphere of a tropical shore. (See p. 319.)

The Bottle-tree of Tropical Australia.

PHEASANTS FOR THE COVERT AND THE AVIARY.*

This is the first number of an excellent monograph from the able pen of Mr. Tegetmeier, distinguished, like the other works of that gentleman, by showing a full knowledge of the subject and the ability to discuss it which springs from a long and varied experience. Its aim will be best expressed in the following extract from the preface: "To indicate and illustrate the various species: to give, as far as is known, their natural history; to describe the best methods of rearing them in preserves and enclosed pheasantries; to enter into the numerous little details respecting their food, management, protection, rearing, diseases, &c., is the object at which I have aimed in the preparation of the following work. In the next chapter I shall treat of the natural history of the pheasants generally—their food, habits, nesting, &c., as far as may be considered desirable in a work of this kind. Then will follow the consideration of their management in preserves, the details of the different methods of feeding the birds, their protection from their numerous enemies, the formation of coverts, &c. This will be succeeded by an account of their treatment in enclosed pheasantries, the hatching of the eggs, rearing and feeding the young birds, and the prevention and cure of their diseases. A detailed description of all the different species adapted for turning out, and of the various hybrids and crosses between them, will follow, and the work will conclude with an account of the allied ornamental species, such as the Gold, Silver, and Amherst pheasants, and the best methods of their management in aviaries." On the value of such a repertory of instructive information to the country gentleman we need not here enlarge, and we shall only add that the work will be completed in four parts, that it is beautifully printed in imperial quarto, and that the illustrations in the first part, now before us, are simply exquisite; so much so that, apart from the practical worth of its contents, the volume will form a charming ornament for the drawing-room table.

"The Country: a Journal of Rural Pursuits," is the name of a new journal which is about to be added to the list of weekly newspapers. It is to treat upon everything connected with sport, natural science, and all else belonging to country life.

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* The Tropical World: Aspects of Man and Nature in the Equatorial Regions of the Globe. By Dr. G. Hartwig. With eight Chromoxylographic Plates and numerous Woodcuts. New Edition. London: Longmans, Green, & Co. 1873.

* Pheasants for the Covert and the Aviary, their Natural History and Practical Management. By W. B. Tegetmeier, F.Z.S. Illustrated with full-paged engravings, drawn from life by T. W. Wood. London: *The Field* Office, 346, Strand, W.C. 1873.

THE FRUIT GARDEN.

PEAR CULTURE.

BY JOHN SCOTT.

No fruit cultivated in our gardens and orchards has made more progress than the Pear; nor are there any other sorts of fruits that can vie with it in beauty, flavour, or usefulness. From the middle of June in one year to May in the next, this fine fruit can be enjoyed either in the dessert or cooked in various ways. In France and Belgium Pears are dried in ovens, and during the spring and summer months form an important article of food made into jelly, for the making of which some of the kinds are unsurpassed by any other fruit. The finer kinds of dessert Pears are generally of a soft, melting, rich, sugary, and aromatic character, such as Marechal de la Cour, grown upon a Quince stock. In some counties, especially Herefordshire and some parts of Gloucestershire, the Pear is largely grown for the purpose of making perry; but Britain falls far behind France in perry making. In this country we only cultivate a few sorts for that purpose, such as the Barland, Holmore, Huffcap, Longland, Oldfield, the Teinton Squash, and a few others; but in France they cultivate, in the various departments, such as Artois, Auxerrois, Beauce, Beauvois, Berry, and forty to fifty other places, a great number of kinds, amounting to over 1,500, and probably not less than 2,000 sorts of perry Pears. The Pears that are grown in each department of France are generally named and well known to the various cultivators, and although there may be many kinds in the various orchards that are only synonyms of those in other orchards, yet there are a great many of well-defined and well-known forms, spread throughout the country, each locality cultivating its own favourite kinds. But, like the cider Apples of Britain, the perry Pears of France require to be gathered together in one place under the management of some individual, imbued with a love of research, order, and classification, who would arrange and determine the various sorts, so that something like a reliable authority might be established.

As regards culture of Pears worked upon the Quince stock, I have above 1,600 sorts, most of which grow freely and bear abundantly. There are many other sorts that will grow upon it; but they make so little wood, and bear so much, that they perish in seven or eight years.

Merlet, writing in 1667, recommends the Portugal Quince as a stock, as it is stronger and more favourable for working Pears upon than any other variety. Its juice is more abundant, and it produces larger and finer flavoured fruit than any other sort. It has, too, this advantage, that it swells equally fast with the graft, which none of the other sorts do. Le Gendre, about the same time, referring to the grafting of the Pear upon the Quince, in his work "Le Manière de Cultiver les Arbres Frutiers," says:—"I have been much aided by the invention of grafting the Pear upon the Quince;" and, further, that he was one of the first who helped to spread the system. Pears grafted on the Quince should be planted so deep that the junction of the graft and stock may be about two or three inches under the ground. This will cause the trees to grow more freely, and live longer than they otherwise would do; and, in cold winters, it will protect the stock, as it is liable to be injured by severe frost. It has been said by some that the Pear graft would send out roots at its junction with the Quince and thus render the Quince useless. I have, however, thousands of Pears worked upon the Quince, and all their junctions buried about two inches under the ground, many having been so nearly twenty years; yet I have never found one to root above the junction, and I think I am safe in saying that not one in a hundred does so. Pears budded or grafted on the Quince, as well as upon the Pear stock, differ very much in their constitution and in the strength of their wood, some growing strongly and freely, whilst others make short and fertile branches. These last do not require root-pruning; but the former will require to be periodically lifted and replanted, some in two years, some in three; but others will require four or five years before they want moving or root-pruning. Where the operation is left beyond two years, however, care must be taken that the trees do not receive too great a check. To prevent this, it will be best only to cut round half the roots one year, and the other half the next, making half a circle round the tree each year, about twelve or eighteen inches off, as the strength of the branches may indicate; the second half may require to be left uncut for two or three years, according to circumstances. Pears on Quinces make fine dwarf espaliers, also very nice trees for low walls, on which they can be either trained fan-shaped, horizontally, upright, or *en cordon*, in which way a great number of sorts can be grown in little room. In exposed places these low-growing trees are very valuable, as, being of low growth, they do not suffer from storms so much as the larger-growing trees. A mode of culture well adapted to all hardy fruit trees in exposed situations is the low bush form. It this state Pear trees can be kept dwarf and handsome objects by cultivating them something in the form of Gooseberry or Currant bushes, keeping them nicely regulated and thin. Apples, Cherries, Pears, and Plums are well adapted for this mode of culture, and generally bear abundantly, especially if kept well root-pruned. They may also be planted in squares six feet apart; this will afford an easy means of protecting them, either by means of nets, tiffany, or canvas. It has been recommended by a writer on fruit to frequently summer-prune these bush Pears; but root-pruning will effect the object much better, and over-pinching soon causes trees to decay.

The cultivation and formation of pyramidal Pear trees, whether upon the Pear stock or upon the Quince, is fraught with so many advantages, that I must here give a short description of my mode of cultivating them. In the years 1836-7-8 I studied horticulture in the "Jardin Fruitier," at Paris, under M. Dalbret, who is favourably known by his work on the pruning of fruit trees. His duty it was most especially to attend to the cultivation and introduction of fruits into the establishment. Under his management, directed by the scientific skill of M. André Thouin, were formed those beautiful, but at that time barren, pyramids, of which we have heard so much during these last twenty years. I recollect how it used to grieve me to see so much labour thrown away in forming such beautiful cones, apparently to no purpose; for during the time I resided in the garden, I do not recollect to have seen a fruit upon any of them. How I longed to take a spade and curtail their roots, so that, instead of carrying off annually loads of spray, my friend Dalbert might be able to carry off bushels of fruit. I have been an ardent pomologist all my life. and I have been a root-pruner for more than forty years. How I came to a knowledge of such a beneficial system was, when studying under the well-known author of the "Book of the Garden," then at Claremont, who was in the habit at that time (1830 and onward) of root-pruning the old Pear trees on the walls; and seeing the fine crops that the trees so operated upon bore, from that time to this I have followed the plan of root-pruning, of which I there learned the benefit. I also acquired much information about fruit trees and other kindred subjects, amongst them root-pruning to cause fertility, and certain it is that this in the present day has become more essential than even branch-pruning. The old adage that "He who plants Pears, plants for his heirs," is now no longer admissible, as most sorts, even the most untractable, may be rendered fruitful from the time they are four or five years old.

To form handsome pyramids, it is necessary to commence with the tree at the age of one year, although to parties requiring these it is generally better to purchase young ones four or five years old, which have gone through a regular system of training in the nursery, as time will be saved, and a crop of fruit may generally be obtained the second year after planting trees of the age recommended. However, let me give the procedure from the commencement. Having obtained some nice straight young trees, plant them where they are to remain, in October. Let them stand until the spring following before they are cut back, so that they may take root, and be able to push their branches the following summer. In February or March let all be topped back to about 15 or 18 inches. It is always best to cut well in the first year, as the future trees depend upon this; if left too long you will have too high a stem, and the beauty of the plant will be marred, at least for a few years, although ultimately the branches will come down and cover the stem. But for those who wish to grow other crops, near or under their pyramids, a longer stem will be preferable, say about 2½ feet—my largest pyramids are 20 feet high, and the branches touch the ground; I have now pruned them up to 2½ feet, the branches will again come down, but be freer from the earth being washed upon the fruit by heavy rains. One year from the time of planting, the tree will have made four or five shoots, the centre of which is to form the leader; the others should be shortened back in February to 9 or 12 inches. You have then your tree ready for its third year's growth, which will be considerable. If the soil is good, during the third summer it will probably make twelve to fifteen shoots of considerable length and strength; and as the tree now begins to assume a good size, it must be the aim of the cultivator to throw it into a bearing state as soon as possible. Instead, therefore, of allowing the shoots to form their whole growth, they ought to be pinched back when they have reached the length of 15 or 18 inches. This will be in July, when 4 to 6 inches should be pinched off the end of all the shoots, except the leader, which should be encouraged to grow straight; the side shoots being pinched will mature their lower buds, and these will swell so as in the next season to become, in many instances, fruit spurs. The leaders are to be shortened to from 18 inches to 2 feet in the spring, when a little thinning and regulating of the branches will have to be done. The fourth year should be a continuation of the procedure of the third, and so on to the fifth, when the trees will have become large enough to have their roots operated upon. If there is no fruit on the trees, this should be done in the end of July or beginning of August, by cutting a trench all round about one foot from the stem, as a centre, digging well down and cutting every root off that protrudes 15 inches beyond the centre, going well in below, and making the spade meet all round under the tree. As soon as this is done, fill in the poorest of the earth, ramming it quite hard around the bottom roots, gently raising the ball a few inches. Then, 6 inches from the surface, dig in some good half-decayed stable manure, placing it as near the surface as possible, to encourage the roots upwards. By doing this a mat of roots will soon be formed, within reach of sun and air, whilst the lower roots will be less and less developed, thus cutting off the supply of cold, crude aliment from below, the source of unfruitfulness in most trees. I have recommended no fruit-pruning in a general way to take place before the trees have got to a considerable size, as time would be lost by operating sooner; and as they receive a considerable check the first season in which they are root-pruned, it generally results in a disposition to form fruit buds, and the necessity for after root-pruning is much lessened, as the trees will then begin to bear, which of itself will keep them from forming great quantities of wood. However, as some seasons prove unfruitful, an advance in wood formation will take place, when, early in the autumn, the spade must again be freely made use of. If attention be paid to check over-luxuriant growth, Pear trees will, in a few years, form such fine matted balls of roots that they might with safety be removed, with all their fruit on them, to a considerable distance. The great things to be attended to are root-pruning, shortening overgrown branches in the end of July, and a systematic regulation of them every winter or spring.

(*To be continued.*)

The Mangrove. (See. p. 317.)

GLASS BACK WALLS FOR EARLY FRUIT HOUSES.

Every gardener knows that after the beginning of April his steep pitched early Peach-houses and vineries lose the sun's rays early in the afternoon, and that they do not receive them again until late the following morning. For hours every day the morning and evening sun beats upon the north side of the back wall of his hothouses, while his early Peach trees and Vines are cast into the shade. He has to light his fires early in the afternoon, in order to meet the quick fall of the thermometer, which he knows will take place as soon as the sun is "off his houses." And in severe weather he must keep up the heat till our great luminary again shows his face on the south side of the wall the following day. For the last ten days the sun has been shining upon the north side of our early Peach house back wall, for three hours, or more, every day, and with a force sufficient in the evening to keep up the temperature of the house till seven o'clock at least, without extra assistance from fire-heat, had the back wall been of glass instead of being a 20-inch brick wall; but the weather, though bright, has been keen and cold, and fires have had to be lighted every day by two o'clock, for the sun goes over the wall shortly after four o'clock p.m., and so coal is wasted to a considerable amount, and time and the energetic influence of the sun are lost. Now, I see no obstacle whatever to a strong glass screen, say of thirty ounce glass, being made to take the place of the brickwork in early houses. We could thus secure the advantages of a span-roofed and lean-to house at the same time, for the trees would have sunlight on all sides, and for a much longer time every day than at present, while the evils to which trees on back walls are subjected, as our houses are now constructed, would to a great extent disappear, for they would have a blaze of light on both sides at different times during the day. I am not aware that any such structures have yet been recommended, but that they would answer I have no doubt.

We have here a glass case, 9 feet wide, with a horizontal ridge-and-furrow roof, and upright fronts. The Peach trees are trained up the trellis in front, and horizontally under the ridges of the top. In a division devoted to Grapes, the Vines are trained in the same way, and the noticeable feature is, that every year we gather Peaches and cut Grapes from the branches under the ridges, ten days or a fortnight earlier than we can from the trees on the front trellis; further, the fruit from under the ridges is always the finest, and the wood there is stronger and better ripened than it is elsewhere, and this is entirely due to the abundance of light and long-continued sunshine which the top branches receive, for the ridges stand above the coping of the back wall, and get the sun early and late, while the front trees get it for a part of the day only. The difference may be noticed at any time by the most casual observer, and has often enough been remarked upon by gardeners who have visited the gardens here. I think that the utilisation of the sun's heat ought to be studied to better purpose than it often is in the construction of our hothouses, and also in our daily practice, if for no other reason than for the saving in coal which in that way might be effected.

Wortley. J. Simpson.

Keeping late Grapes in Bottles.—I have practised this plan of keeping Grapes for some time, and I find it to answer perfectly, provided the fruit is perfectly ripe when cut; but, if unripe it will not keep. I am pleased to see that Mr. Tillery still thinks well of the bottling system. Mr. Kettles, the gardener at Archerfield, speaks favourably of my "Grape-rails," from which he supplied his employer's table the other day with fruit put on them about the middle of last September; yet, he says, "the berries were plump, high coloured, and very fine." On the 12th of this month I placed on my employer's dinner-table Muscats and Lady Downes seedling Grapes of 1872, cut six months from the Vines, also black Hamburghs of 1873. Of the Lady Downes I send you a sample bunch, cut from the Vine six months ago, in order that you may test its quality. The bottles which I use only require to be filled with water once in twelve months, and my improved Grape-rails are now all made self-supporting. The Vines from which I cut the ripe Hamburghs were only fourteen months old from the day in which the eyes were put in to start, and I may add that I have managed to fruit Vines in this space of time every season for these last ten years.—Richard Nisbet, *Aswarby Park Garden*. [The bunch of Lady Downes sent was in every way excellent, the berries being large and plump, and the flavour all that could possibly be desired.]

Keeping Grapes on the Vines.—In reference to the question as to whether late Grapes, when allowed to hang on the Vines three or four months after they are ripe and the leaves have fallen, have any tendency to exhaust or weaken them or not, I suppose all will admit that there is a constant evaporation going on from ripe Grapes, varying, of course, according to temperature. To prove this, it is only necessary to sever a bunch from the Vine and suspend it in the same house, and to mark the difference in condition which two or three days will make. The footstalks will become flaccid, and the berries will lose their plumpness and freshness. But if the same bunch is hung up in a dry room that is not much influenced by the external temperature, the evaporation is much less, and if the room is darkened it will be reduced to a minimum. Where, therefore, does the supply come from to make good the loss caused by evaporation, if not from the Vine? As far as my observation goes, after the fall of the leaf growth recommences. Vines, unlike many deciduous trees, do not extend their roots in winter. I have been examining and testing this subject for years, and this has been the case invariably, both with bottom heat and without it. Until the buds break and commence unfolding their leaves, there is no root entension. Therefore, if a heavy crop of Grapes hang long after the leaves have fallen and root action ceases, the loss by means of evaporation must be supplied from the stored-up sap. This, at least, is my view of the case; and the conclusion I draw, and that which I think is generally acted on by practical men, is this: When from necessity the Grapes have to hang on the Vines a long time after they are ripe, they must be cropped well within their strength; or, in other words, a less crop must be taken than if it could be cleared off within a reasonable time. The fact that "J. S. W.'s" Vines have borne good crops for twelve or more years, and that they have retained their vigour unimpaired, does not prove that Grapes hanging on Vines long after they are ripe do not exhaust them. Cropping Vines, or indeed any other fruit tree, is entirely a question of degree. What one calls a heavy crop, another thinks only a moderate one; but what all should aim at is to crop according to strength. We may plant a house of young Vines, and treat all alike as to soil, &c., but some will probably have much more strength and vigour than others. I believe, in cases where there is any marked difference in the strength of Vines in a house, it is good policy to allow the strongest to extend itself laterally, and so gradually remove the others. I can only say, in several instances where I have seen this acted upon the result has been highly satisfactory. After a wet cloudy season like last summer, Vines that were started late might not perfectly finish their fruit. Although fairly coloured, they might still be deficient in saccharine matter, and therefore would not keep well, either on the Vines or in bottles. A good many years ago, when the Black Hamburgh in many gardens (so far, at least, as black Grapes were concerned) furnished both the early and late supplies, it was the custom in some places to retard its breaking as long as possible, if the object was late Grapes, in order to prolong its rest; but thick-skinned kinds, like the Alicant, Barbarossa, and Lady Downes, require all the time there is in an average English summer to mature their fruit before the short dark days set in. I believe the sooner all late Vines are pruned after January the better it is for them; and the longer their period of rest the stronger will they break, and its influence will be felt in swelling off and finishing their fruit.—E. Hobday.

Col. Cheney Strawberry.—A correspondent of the *Rural Home* says if he were to have but one variety, this would be his choice. He finds it as hardy and productive as the Wilson, while it is much superior to that variety in size and flavour, an opinion in which the editor of the *American Agriculturist* agrees.

VEGETATION IN THE PHILIPPINE ISLANDS.

The soil of these islands is wonderfully fertile, and the produce enormous, especially that of sugar, coffee, cocoa, rice, cotton, hemp, indigo, and tobacco. They furnish a wood used for dyeing purposes, which is largely exported. It is called Sappan wood, and is the produce of Cæsalpinia Sappan, C. pulcherrima, and various other species; from the island of Koilo a substance resembling gutta percha has been obtained from a tree which the natives call "Nato." Most of the sugar and coffee from the Philippine Islands comes to England, whilst their hemp finds its way into the hands of the Americans, and the majority of their tobacco exports go to Spain. Manilla hemp, called by the natives "Abaca," is the produce of Musa textilis; it is both fine and strong; the natives manufacture many things from it, such as table-mats and ornamental fancy baskets. The island of Luzon abounds with choice plants, but its laws strictly prohibit foreigners from going into the interior, and thus we are left in almost total ignorance of its flora. The interior of the country is intersected by ranges of hills, forests, rivers, and lakes. Around the lakes, as seen in our illustration, tropical vegetation, consisting of Tree Ferns, Bamboos, and large species of Ficus, luxuriates. In such spots may be found Tree Ferns and Filmy Ferns, choice Orchids and magnificent Aroids. The Fern flora is indeed most extensive, and such Orchids as have hitherto been obtained from the Philippines go to prove that glorious new species are in waiting for any adventurous collector who can penetrate to the interior of the different islands, and who can happily return safely with his treasures. Amongst Orchids known to exist there, a few of the most noted are—Vanda Batemani, Saccolabium violaceum, Dendrobium onosmum, D. superbum giganteum, D. taurinum, D. tortile, Aërides quinquevulnerum, Cypripedium lævigatum, Dendrochilum filiforme and glumaceum, besides various beautiful species of Cirrhopetalum, Cleisostoma, and Phalænopsis, of which we have already received from these islands P. Schilleriana, rosea, amabilis, Luddemaniana, grandiflora, intermedia, and Portei. What a galaxy of beauty do such names suggest! Turning from Orchids to Ferns, there are immense numbers of real gems. Cumming brought home dried specimens, the living representatives of which we should like to see in our Ferneries. Of these, a few of the most desirable were one Photinopteris Horsfieldii, a singular and beautiful plant, with Laurel-like leaves of the most brilliant, shining green; many fine species of Trichomanes and Hymenophyllum, Aglaomorpha Meyeriana, Dryostachyum splendens, Lecanopteris carnosa, Tænitis blechnoides, Dipteris Horsfieldii, Gleichenia excelsa, bifurcata, and others, Neottopteris musæfolia, Kaulfussia æsculifolia, and many other genera. Of Philippine Island Tree Ferns we have one species in cultivation—viz., Alsophila glauca; there are, however, some seven or eight other kinds known to exist which have not reached us, some of them finer than anything of the kind we yet have; in fact, nearly three hundred distinct species of Ferns have been discovered in these islands, the majority of which are peculiar to them; while, to show how rich in Ferns the Island of Luzon must be, I may add that upwards of two hundred out of the number of kinds discovered belong to that place. Of the general flora, however, we know little. Of forest trees, various species of the following genera are known to inhabit these islands—viz., Diospyros, Dipterocarpus, Ficus, Cedrela, and Artocarpus. The Talipot Palm (Corypha), also abounds, as do also Caryota Cumingii, and many species of Calamus, which grow in some instances upwards of 100 feet in length; of these the most noteworthy are mollis, usitatus, maximus, and gracilis. Of shrubs and underwood may be named Ixoras, Curcumas, Alocasias, and numerous Aroids, Crinums, Pitcher plants, and Bromeliads. Of this latter order Bromelia Pinguin produces a splendid fibre called Pina muslin, very soft and delicate in texture. From this, too, are made the cigar-cases which are so much prized in this country. In the West Indies, the cooling juice of the fruit is highly prized in cases of fever, &c. Many of the Bromeliads supply valuable fibre for textile purposes, and which might also be employed in the manufacture of paper. Several species are cultivated for the sake of their flowers. Pandanuses or Screw-Pines also abound in these islands, P. ornatus, P. Blancoi, and P. Porteanus having already been introduced. G.

VEGETATION IN THE PHILIPPINE ISLANDS.

THE ARBORETUM.

THE FIRST ROBINIA PSEUD-ACACIA INTRODUCED INTO EUROPE.

To a gardener visiting Paris, one of the most interesting sights is all that now remains of a somewhat remarkable tree which has stood for the last 237 years in the gardens of the Muséum. The seed from which it sprang was received amongst others from North America in the year 1601, by Jean Robin, Professor of Botany at the Jardin des Plantes, and, thirty-five years later, the subject of our notice was planted in the gardens of the Muséum by Vespasien Robin, so that it is now probably 272 years old. The top of the tree, having gradually decayed, was cut off many years since, and the stump of a trunk which remains is about 9 feet high, and 3 feet 3 inches in diameter at the base. It bears at its summit the stumps of three of the principal branches, to which the two living branches are secured and supported by bands of iron. The stump of the trunk is very much decayed and abounds in splits and crevices, which, with a view to its preservation, have been carefully filled up with plaster. The branches which still continue alive, however, exhibit a considerable amount of vigour, which promises a prolongation of existence for many years to come. Near the top of the stump may be seen a label bearing the following inscription:—

Robinia Pseudo-acacia, L.
Acacia Virginiensis spinosa, Roy.
Amérique septentrionale
Introduit en France par Jean Robin
en 1601,
Planté par Vespasien Robin,
en 1636.

This venerable tree is considered to be the parent of all the varieties of Robinia which are now so extensively spread over the continent.

Metrosideros florida as a Hardy Shrub.—On a nice sunny border I planted out an old plant of this, which had grown too large for the conservatory. Not liking to cut it in, I thought I would try its hardiness out-of-doors. That was in the spring of 1869. As summer drew on, it commenced growing rapidly, and was soon covered with its singular bottle-brush-like flowers, which were much finer and were produced with greater freedom than I had ever seen them whilst the plant was growing under glass. Winter came, but it was prepared for hard weather, for I found that it had well matured its growth, and it withstood the winter without the least protection. It has continued making a good growth every summer, and has also continued blooming very freely, and that on a very elevated spot in Derbyshire. I may add that there was no preparation made as to soil; it was merely planted in the ordinary soil, which was very shallow, upon rough grit stone rock. It has occurred to me that it might make a very beautiful addition to our shrubberies, for when in bloom it was the admiration of all who saw it. Not very many years ago we used to see the Escallonia rubra in our greenhouses. Now it covers many an outside wall, and many other plants might be named which, could our good old departed friends of the craft see, would cause them much astonishment.—C. Coombs, *Tabley, Knutsford.*

The Douglas Oak.—Can you kindly give me any information respecting this Oak? I see it named in catalogues; but have never had an opportunity of personally inspecting it.—Quercus. [Mr. Meehan states, in "Proceedings of the Academy of Natural Sciences of Philadelphia," that "he had journeyed last summer several hundred miles through the Rocky Mountains of Colorado, and had noted remarkable variations in the only species of Oak in that region—Quercus Douglasii or Q. Neo-mexicana of some authors. The first plants he found of this occupied large clumps in flat open spaces, and grew only about 3 feet high. He felt sure he had several species, and collected specimens accordingly. One form had the leaves so much like the Q. Cerris of Europe, that branches of the two mixed together could scarcely be separated; others closely resembled the European Q. robur; and again some came near Q. alba. It was, therefore, only after many successive days of acquaintance with it, during which it had ranged from a low bush to a small tree, from leaves deeply lobed to leaves almost entire, from leaves of a deep, shining green to leaves of a glaucous gray, trees with fruit pretty well matured, to others only just commencing to set their fruit—from long to short pedunculated, elongated to sub-rounded fruit, and so on through other changes, that he was forced to the conclusion that he had but one species to deal with, viz., Q. Douglasii. It may, therefore, be set down as a very variable species.]

The Movement of the Sap.—Your correspondent, Mr. J. Brennan (see p. 278), has mistaken my opinion when he writes—"The correspondence which you have hitherto published on this subject tends to show that sap does not descend." I said that it descended and was absorbed, but did not re-ascend or circulate as does animal blood. Sap is nutriment undigested, cambium is the fat secretion of the plant. The Geranium cutting must contain succulent alburnum, or sap-wood and cambium; it must not be dry, dead duramen; it requires the artificial spring or summer heat, which causes chemical action, dissolving the starch and stored-up nutriment, so that the vital action of growth by cell-division may commence, just as the camel subsists on its own fat. The laws of osmosis would prevent the re-ascent of the dense, concentrated, de-oxidised, sap. The un-elaborated sap ascends through the alburnum, is elaborated, and descends through the cambium, the increase of which it causes. From the cambium originate both bark and wood.—Lector.

Cryptomeria pungens rubiginosa.—The form of Cryptomeria which has been named C. pungens is considered to be a variety of C. japonica with larger, more distinct, and more pointed leaves, from which last-named characteristic it derives its specific name. The variety C. p. rubiginosa first made its appearance among some seedlings of C. pungens, from which it differs by a single remarkable peculiarity, namely, that in the month of August all the leaves and branches assume a coppery or tawny-red colour, which they retain until the following March or April, when they revert to their original green; so that for at least seven months the tree presents the aspect of some of the New Zealand Conifers, such as Dacrydium and Podocarpus, and forms a very striking contrast with other Conifers whose leaves continue evergreen. C. p. rubiginosa does well in any soil that Conifers will grow in, and is easily multiplied from cuttings, which it will be advisable to take from strong shoots or branches, if strong and vigorous trees are desired.

Planting Poplars.—I was engaged this spring in thinning a plantation in Dumfriesshire, about 500 feet above sea level, planted forty years ago. The wood was well grown and very marketable, the Spruce averaging about 8 feet cubic, and the Larch about 9 feet. For the former I got 9d. per foot, and for the latter 1s. 3d., delivered at the nearest railway station. In one of the most exposed parts of the plantation, where the Fir trees were considerably under these averages, a row of white Poplars had been planted along a drain conveying the water from a neighbouring field. I cut four of these, rather under the average, and they measured 36 feet cubic each. I sold them at 1s. 4d. per foot, or rather more, as I got £10 for the four from the same man to whom the other wood was sold. I have for some years been sensible of the profit of planting the larger kinds of Poplars, for the wood of which there is now so much demand for railway breaks, &c., and find the Abele Poplar grow rapidly in sheltered situations, but the black Italian does better where the situation is more exposed. A damp clay or near the side of a runnel does well for them; and in all cases their light fibrous roots require the soil to be well loosened when they are planted.—*J. H. J. S., in The Field.*

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Hydrangea paniculata grandiflora.—Take it all in all, this is the finest shrub we have. The Garden says it grows from 20 to over 30 inches high. Ours last year was about 5 feet high, and it is a young plant yet.—*American Agriculturist.*

Pinus Sinclairii.—I am invited to see a fruiting specimen of this Pine. What is it? Where does it come from? When was it introduced? and how may I know it to be what it professes to be? I fail to find it referred to in any books or lists of conifers.—W. T. P. [The Pinus Sinclairii of Sir William Hooker is the same as P. Benthamiana, and was introduced by Hartwig from California in 1848.]

Prunus triloba.—This, either against walls or in the open ground, is one of our loveliest shrubs, the delicate pink of its double, large, and densely-produced blossoms being quite distinct from anything else. By growing a few plants of it against a sunny wall, and some in the open ground, an agreeable succession of bloom is obtained. Being of good free habit it is well suited for isolating or grouping with other good shrubs on the Grass.—R.

Durability of Chestnut Timber.—The roof of Westminster Abbey, long supposed to be of Oak, when examined some time ago as to its soundness, and found to be perfect, was at the same time discovered to be of Chestnut. It has stood for eight centuries already, which would go to show that Chestnut timber would at least serve any such purpose now very excellently. Another very valuable quality it possesses is, that its growth is many times more rapid than that of Oak.

Old Oak Trees.—In The Garden (see p. 253), is a short account of the remarkable Oak felled in 1810, near Newport, in Monmouthshire. It may interest some of your readers to know that in *Time's Telescope* for 1816, it is stated that the quantity of its bark amounted to 65 cwt., and that it contained 48 load and 26 feet of timber. The men engaged in squaring it for ship timber were at work three weeks and four days, and one pair of sawyers were employed for above five months upon it. The whole produce of the tree, when brought to market, was valued at rather less than £600, and the labour involved in converting it into timber exceeded £82.—R. G. Baker, *Ivy Cottage, Fulham.*

THE GARDEN IN THE HOUSE.

BUTTON-HOLE FLOWERS.

Ferns used for button-hole, or indeed for any kind of bouquets, should be cut off plants that have been grown in a cool house, or that have at all events been well hardened off, or otherwise, though they may look fresh and nice when cut, they shrivel up in a few hours, when of course their beauty is gone. In the case of Maiden-hair it is a good plan to cut off the very young points, as, with the exception of these, the other parts of the frond keep well. Another point that should be remembered is always to keep the stems of the button-holes as thin as possible, in order that they may easily pass through the coat, and nicely fit the little glass water-tubes which are now so much worn, and which keep both Ferns and flowers fresh so much longer than they otherwise would be. After the bouquets are made, many place their stems in water, to keep them fresh; this I do not think a good plan, as, though the stems may be in the water, the Ferns are exposed to the air, and, thus circumstanced, they will not keep nearly so long fresh as if they were shut up in some air-tight box or drawer. Dealers in bouquets have numbers of drawers lined with zinc in which they keep their flowers, mounted or otherwise, but though those who have shops must have such appliances as these, it is not to be expected that amateurs will be furnished with them. If I want to keep a button-hole flower from one day to another I place it in a common little box made either of wood or cardboard, over the bottom of which is laid some wet Moss of the kind one gets in bundles at the flower shops or finds in woods or on banks. I place the back of the bouquet next the Moss and cover the stem over with some more wet Moss. I then sprinkle the flowers and Ferns well with water and shut down the lid, which is as air-tight as possible, and, treated thus, flowers and Ferns will keep fresh for days. If I want to send a bouquet by post, I put Moss enough in the box to raise the bouquet when laid in it nearly level with the lid when shut down, and across the face of the flowers I lay a piece of cotton wool, which keeps them from rubbing against the lid. The illustration given above represents a flower of Dendrobium nobile, backed with a spray of Maiden-hair Fern. A. H.

A Coat Flower (Dendrobium and Maiden-hair).

NOTES AND QUESTIONS ON THE GARDEN IN THE HOUSE.

Aponogeton distachyon.—This grows freely indoors in a bell-glass. It may now be seen flowering freely in the Mesembryanthemum house at Kew, which it fills with its fragrance. This plant is growing in a bell-glass about 15 inches in diameter, and has been blooming for the past three months.

Everlastings.—Nearly seven years ago I tried to group some of these gracefully under a glass-case, covering a little silver epergne. I only used two kinds, the little Yellow Everlasting which is used for the immortelles, and which thrives in the sandy loam of my garden, and that elegant Grass, Bromus brizæformis, which I hope I may venture to call an "everlasting." Both these things look as fresh and pretty now as they did when I placed them under the glass. A few of the Grass flowers have fallen, no doubt from the glass being frequently disturbed.—M. F.

WILD GARDENS.

(*From "Belgravia."*)

Extremes meet even in gardening, the oldest of the arts. At the time when its practice has become most formal and artificial, delighting in geometrical arrangement of beds and harmonious selection of colours, a revolt is making head very successfully against these refinements, and a reaction has set in towards a more simple and natural method. Lord Bacon would have sympathised greatly with this movement. He speaks of a kindred folly in gardening, "the making of knots or figures with divers coloured earths," with contemptuous indifference; "they be but toys; you may see as good sights many times in tarts." But he is careful to include, in his platform of a princely garden, "the Heath, which I wish to be framed as much as may be to a natural wildness," and then he prescribes for it thickets of Sweetbriar and Honeysuckle, abundance of Violets and Primroses, little mounds set, some with Wild Thyme, some with Pinks, some with Germander, and so forth, "being withal sweet and sightly," till it is easy to picture the philosophic statesman, like the Epicurean poet of Rome, walking amongst his floral treasures and revelling in their *copia narium*. It is indeed a natural consequence of the present return of the national taste to nature in poetry, painting, and amusements, that the same feature should be prominent in the gardening of the epoch. Men are tired of the grand Italian style, with its terraces and statues, its temples and vases; as well as of the Dutch practice of clipping Yews and Hollies into monsters, according to the dogmas of the topiarian art which was in vogue in England with the early Georges. Even the old arrangement of a garden in formal walks, clipped alleys, and a smoothly shorn bowling-green, which found favour with our ancestors, has been discarded; though Scott constructed a bowling-green at Abbotsford, and the modern game of croquet bids fair to render a level lawn a regular feature in every garden for years to come. Nature, however, like the beauty immortalised by Horace, in her simple native charms, is always most attractive to a pure taste. The influence of fashion may for a time repress her fascinations, but they are too irresistible to suffer more than a temporary repulse. During the last thirty years the tendency of all æsthetical studies has been naturalistic, and men have been strongly tempted by such writers as Kingsley, Tennyson, and, above all, Ruskin, to seek for healthy and unsophisticated inspiration in the beauties of woodland and sea scenery. No wonder, then, that the country has invaded the trim precincts of the pleasaunce, and that a cherished portion of many a garden at present is the waste and shady corner which used to be its rubbish-heap and eyesore. Mr. Robinson, in his "Wild Garden," (John Murray) has put together an admirable compendium of information of all that concerns the subject. Without invading his province, or trespassing on the charming wilderness of flowers which he teaches us how to create, we purpose to throw out a few practical hints for those who, without much expense, would utilise any waste corner of a garden, and provide themselves with a perennial source of delight. Indeed, the special beauty of a wild garden in our eyes is, that amusement and recreation can be found in it at all seasons.

There are a few principles to be carefully observed in laying-out a wild garden. It matters not how large or how limited be its area, whether it be flat or elevated, for luckily every feature of it can be judiciously made use of, but a single artificial touch is fatal to its beauty. Rockwork that has evidently been constructed, fragments of old masonry, gurgoyles, pinnacles, and the like, must be wholly eschewed. They are like "the little rift within the lute" that renders all its melody inharmonious. Such artificialities provoke immediate comparison with the spar-grotto and rockwork-screens of the retired tradesman's suburban villa, or with the groups of sea-weed and shells gummed on paper and suspended round the walls of sea-side lodgings, which so greatly offend the eye with their contrast to nature without. Again, the walks which intersect it ought not to be made of gravel, nor must they too be trimly swept, or edged with box or tiles. The earth should only be trodden and beaten into paths, and the leaves which will accumulate on them during autumn ought to lie, unless they become unsightly heaps. Too many rustic bridges again or summer-houses will somewhat impair the wilderness. Nature, it must be borne in mind, is to be stimulated, not improved. If the situation admit, nothing is so charming as to have water introduced, either by a runlet or pond; anything, however, in the shape of a squared basin or formal receptacle is to be studiously avoided. What is being constructed is not a show-garden so much as a haunt dear to meditative minds and lovers of natural beauty; a Paradise in short, as the old Greeks would have termed it; a grove which Romans might have deemed sacred to Faunus, Picus, and the Dryads. Nor must its owner fancy that it can be soon finished; one great charm of the wild garden is, that it admits of every new shrub or flower found in the fields during his rambles being transferred to its precincts, and added to the imprisoned beauties. Thus, besides being a delight to the senses of sight and smell, such a garden becomes a valuable instructor in the habits of flowers, and an appendage to his regular garden, which no person of poetical or artistic tastes ought lightly to forego. One of the first botanists of the day possesses a most interesting pleasaunce of this kind. Most artfully and yet naturally constructed, it contains every vegetable curiosity which its owner has discovered or purchased throughout the country. All our native Ferns, and a vast number of the rarer varieties and abnormal "sports," which diligent culture or careful selection has procured, may be seen under its umbrageous trees. A perfect nursery of wild plants, Nettles, Briars, Thistles, &c., all of them most beautifully variegated, and only obtained by years of searching, also flourishes in it. Multitudes of rare and curious plants have been skilfully introduced; the green Rose, whose petals have disappeared and given place to a bunch of sepals; the Umbrella Plant, the Tree Ivy, all sorts of cut-leaved and gaily-painted trees and shrubs, till the collection has become unique, and a ramble through it is a treat to eye and mind alike. A wild garden, when it thus reflects its owner's tastes, is the most charming of home recreations; and whenever he goes away, in some sort it goes with him, for he can always find a new subject to add to his domains. A Stonecrop thus brought, say from Ilfracombe, or a tuft of mossy Campion from Helvellyn, recalls the delight of the summer holiday for many years, as often as the eye falls upon it.

Such a garden as we have described is, however, too full of specialities to commend itself to any one save a real lover of plants, on account of any wonderful contrivance, adaptation, or abnormal structure, which they may exhibit, rather than for their bright hues or rich fragrance. The generality of men and women resort to a garden as to a lounge, and variety in colour and form is, perhaps, all they care about, as these requisites rest the eye and insensibly calm the mind. Let us try, therefore, to suggest a method by which a wild garden which shall possess these qualities may easily be constructed. Around most country houses extends a belt of shrubbery, or a narrow plantation. Either the one or the other can be advantageously used for the purpose by cutting down a few trees here and there, so as to destroy the regularity of the belt, and running a sinuous path through it, which may be broad enough for two persons to walk abreast, or (which is preferable) just sufficient for the solitary rambler. A rustic seat or two must be erected at suitable spots, if possible where a view is commanded, or where the underwood opens out a glade or meadow. Nothing can be better adapted for seats than the trunks of the trees which have been cut down, sawn into a convenient height, as all artificial features must be especially avoided. Those who have seen the composite lengths of rockwork which are piled up at Kew, and covered with Alpine and other plants, will at once recognise the execrable violation of taste which would result were similar constructions to be introduced in a scene consecrated to wild and sylvan beauty. A few hillocks should then be thrown up by the spade in a direction roughly parallel to the path, and of different heights, so as to vary the uniformity of the ground, and secure positions for displaying the Ferns and wild plants, which must next be tastefully dotted over them, while the level ground should gradually be carpeted with Periwinkles (green and variegated), Primroses, Ground Ivy, &c. Nothing more is needed to secure the perfection of a wild garden. We have such an untended realm ourselves (no gardener is ever suffered to touch it), and esteem it one of the greatest solaces of country life. It serves a meditative mind for a library, and the tired spirit for the pleasantest of retirements. Undoubtedly such a pleasaunce, to be thoroughly appreciated, should belong to a person fond of studying vegetable growth and physiology. As Plato wrote over the door of his study, "Let no one ignorant of geometry enter here," over the portals of the wild garden might aptly be inscribed, "Let no one enter except he know a little botany."

Another wild garden rises before the mind's eye in treating of this subject, which was arranged on a very different and more expensive plan than the last-mentioned one, but which was superior to it in some respects, notably so in the protection which it afforded to Ferns and tender plants. It belonged to a clergyman, who owned a large level flower garden. Being fond of work, in conjunction with his man, he excavated the whole of the lower end of the lawn, to the depth of 12 or 15 feet, in an irregular curve, throwing the earth into banks on the edges of the cutting, and in some places, inside the hollow thus made, in the form of rough heaps. The width of this excavation, which ran the whole length of the garden, was perhaps from 25 to 30 feet, varying every here and there, to prevent monotony. Rustic bridges were thrown over this, and covered with Ivy and Honeysuckles. Trees and shrubs were planted on the mounds; Ferns, Stonecrops, Orpine, and Alpine plants were copiously introduced, and a small runlet diverted from its course was induced to tumble down one side of it, in a mimic cascade, fringed with water-loving plants. It was the parson's delight to lead a visitor through this, and at the end to cause him to turn a corner and confront what seemed a lake at the termination of the pleasaunce, but which was in reality an ingenious utilisation of the village horse-pond! The whole idea was unusually well adapted for the purpose for which it was designed, to form a home for our native wild plants, while it formed a distinct and delightful feature of the vicarage garden.

No difficulty will be experienced in getting wild plants to grow and prosper in some such wilderness as we have endeavoured to delineate. Save in very dry seasons, they need not even be watered; the trees overhead warding off the direct rays of the sun, and securing them a plentiful supply of moisture by the passing vapours which they distil, and drop from their leaves on them. Where Ferns are meant to grow luxuriantly, however, it is as well every now and then to give them a copious watering at nightfall. Every autumn the Primroses, Violets, &c., may be divided, and the offshoots planted at some distance from the parent-stock. It is advisable also to suffer the dead leaves to lie where they fall, as they shelter the tenderer species during winter, and enrich the ground afterwards by their decay. Raking them up involves too often tearing up well-rooted specimens. Indeed, it cannot be sufficiently impressed upon the lovers of wild gardens that gardeners should never be allowed to enter them. They are certain to think their masters lunatics for preserving and propagating weeds, and neglecting the ribbon beds and geometrical arrangement of bedding-plants which lie so close to their hearts, but that does not much signify if they can only be kept out of the wilderness. In some portion or aspect of the wild-flower garden all the native plants which please its owner will prosper; it will be for him to learn how to adjust the space at his command to the conditions each family of them requires. And this renders work in the wild garden the best possible lesson in practical botany.

A few words must be added, in conclusion, on the choice of wild plants for the garden. Bracken and Ferns will, of course, be largely introduced, with Ivy and Honeysuckle overhead. Foxgloves of different colours (the bees will effectually mix the seed annually) are especially effective on the outskirts. It will be found that they will not prosper well in too shady spots. Periwinkles, Ground Ivy, the Veronicas, Violets, &c., will furnish the necessary tints of blue; while the Pink, Campion, Lychnis, Soapwort, &c., will secure shades of red. Snowdrops (single) and Daffodils (also single) will flourish well on elevations in sunny, open spaces. Primroses, however, are unrivalled for beauty in spring. Plant as many of the native straw-coloured flower as can be conveniently procured, and intermix here and there a few plants of darker shades—pink and purple; in a few years they will increase surprisingly, and, owing to the bees mixing their pollen, will flower of every shade between pure white and the deepest crimson. The wild garden is never more attractive than in March and April; when these are blossoming, Wallflowers may be sparingly dotted about; Arabis and Iberis, Alyssum and Aubrietia, will variegate the more open spaces; Honesty, with its mauve flowers and curious bladder-like seed vessels, is indispensable; the Sunroses and Chickweeds, but especially the Mouse-ear, to furnish "Forget-me-Nots for happy lovers," must by no means be forgotten. Thus will its possessor rejoice in a garden which offers delight to sight and smell every month in the year, which takes care of itself, nay, which, without any expense, annually grows more beautiful.—*M. G. Watkins.*

SPRING.

See! the cautious Oak at last,
Owning angry Winter past,
Spreads his smiling leaves—in haste
Lest the roving woodsman dread,
Haply holding him for dead,
Plying horrid wound on wound,
With gleaming axe should bear him groaning to the ground.
Then, with emulous blossoms gay,
Snowy Chestnut—snowy May
Laugh by every woodland way,
Then the blushing Lilac kisses
His Laburnum's golden tresses.
And, while sheep-bells mingle sweet
With the new-born lambkin's bleat,
Loud the pairing thrushes sing,
"Winter-time has turned to Spring."

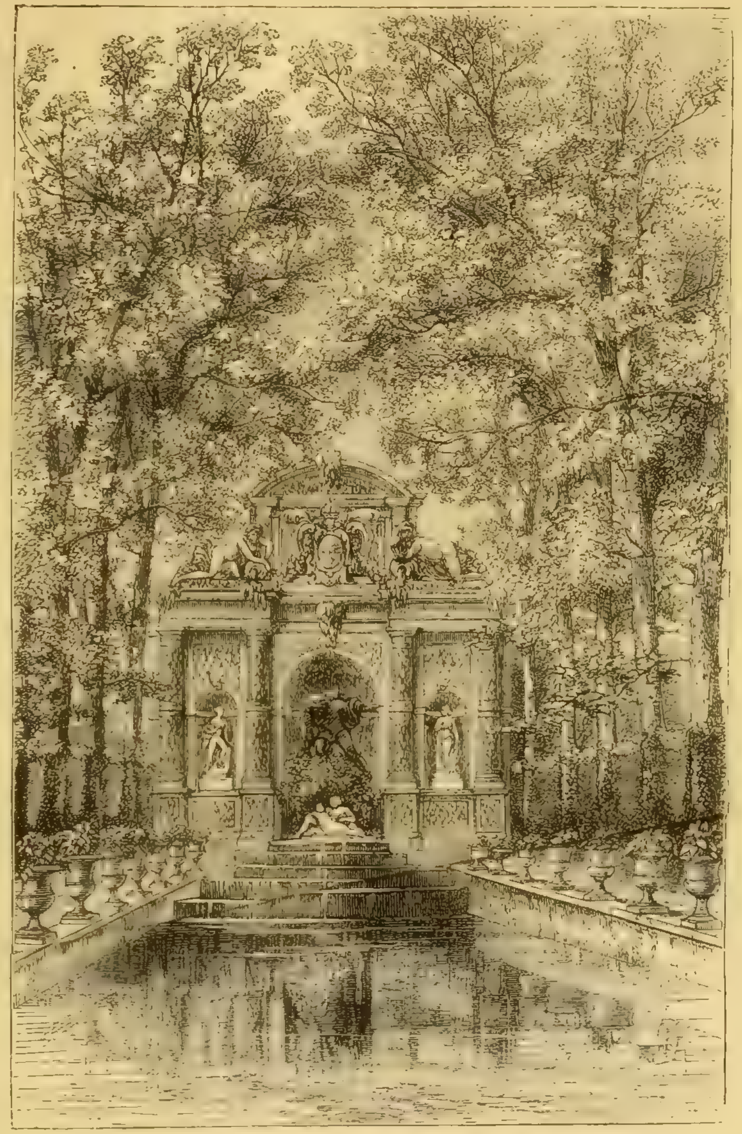
Now to Man that happy Voice
Cries in turn "Rejoice! Rejoice!
Come, O come! for now at last
Lo the Tyrant-King has passed.
Fear no more his snows and frost,
Reck not of his tempests rude,
Winter o'er the seas has crossed,
And his storms are all subdued."

A. P. Graves, in Fraser.

GARDEN ARCHITECTURE.

BY NOEL HUMPHREYS.

There is no more difficult task in ornamental gardening than the blending of architectural forms effectively and harmoniously with general garden scenery. If the principal object be of considerable dimensions, it necessarily requires supporting with such subsidiary features as will cause it to blend pleasingly with the naturally irregular forms surrounding it, whether of trees, turf, or walks. As an unfavourable example of a combination of the rigid lines of architecture with shrubberies, curved walks, and sloping turf, the huge mass of lumpy balustrades, basins, and fountains at the head of the Serpentine, in Kensington Gardens, may be cited. Its features are so crowded, so heavy in character, and present so many formal repetitions, that the effect is that of an incongruous and disagreeable patch in the midst of fine surroundings. It terminates abruptly on every side, and though not without merit in some of its individual features, is, as a whole, a blot upon the scene which it was intended to embellish. Very different is the result secured by a design of somewhat analogous character in the gardens of the Luxembourg, at Paris, of which the annexed engraving is a careful representation. The design and execution of this artistic piece of garden architecture belongs to the period of Louis XIII., and the lines of the architectural composition have the variety combined with nobleness which distinguishes many of the works of that date. They are, moreover, almost invariably enriched with figures in such a manner as to form a necessary part of the device, and also with an infinite number of those rich and appropriate details, which, in works of a more recent date, were generally pared away, in affectation of "Grecian" simplicity. In the work in question, such details as those referred to form an important feature of the composition. As being a structure devoted to the display of water in an ornamental manner, river deities are introduced on each side of the pediment pouring forth a sculptured representation of water, which is supposed to form itself into stalactites as it falls, and so becomes part of the decoration of the edifice. The same feature, water hardened to stalactitic forms, is made the chief decoration of the columns and of the panels between and beneath them. Well executed statuary further embellishes this handsome design for an architectural fountain; and its appropriate character is further enhanced by the five deep ledges, of semicircular form, over which water continuously falls, in thin, glassy sheets, into a basin surrounded with simple stone dressings of massive proportion.



Fountain in the Luxembourg Gardens.

A fountain of this kind is generally employed to conceal the small extent of a certain portion of the grounds, or, as is the case in the gardens of the Luxembourg, to keep out of view unsightly features. The great difficulty in a case of this kind is to make an object of such magnitude and so much architectural pretension blend harmoniously with the ordinary features of the surrounding grounds. This has been so successfully effected in the present instance that it becomes interesting to observe and analyse the methods employed for the purpose. In the first place the necessary formalism of the architectural features are gradually softened off by a series of stone vases filled with flowering plants, which are ranged in line along the stone coping of the basin. On the opposite side of the walks to which they form bordering objects next the water, trained Ivy comes into play; in order to finally blend the formal with the natural by means of festoons trained from trunk to trunk of a short avenue of Planes, the foliage of which is left entirely uncropped. These artificial and regularised festoons, combined with the regular training of the Ivy about the lower part of the Plane trunks, up to the height from which the festoons are suspended, form such a gradual and judicious softening off of the formal features into the masses of untrained greenery of the adjoining shrubberies that no incongruity is felt, even by the most artistically cultured eye, and the formal fountain becomes at once an acceptable and agreeable feature in a scene to which it adds variety and interest, instead of being, had it been crudely introduced, an obtrusive and disturbing feature.

If some such principles as those described in the present instance were carefully considered before introducing temples, or terraces, or fountains into rustic scenery, we should see fewer of the violent and tasteless anomalies which so often disfigure our gardens and parks, both public and private, than we now do.

Much anxiety is felt in Russia regarding the destruction of forests, which proceeds very rapidly, and threatens to deprive the country of one of the most valuable of its export products—wood for building purposes.

FALLEN LEAVES.

Read by Professor Owen before the Hampstead Literary and Scientific Society.

These withered glories of the summer, their fall in the sere and yellow state of autumn, are symbolic. There are vivid and noisy pleasures; there are those also of the quiet kind, and not the less pleasing, even perhaps more cherished in memory, when tinctured with some sadness: and in such a mood have I watched, on a still, calm day in latter autumn, when no breath of wind was stirring, the leaves settling straight down in silent tremulous fall, "one after one," suggesting and recalling the friends and loved ones that had successively passed away in peace! Yet it is not altogether surcease and loss; the leaf-fall better understood may suggest brighter associations. The poet, indeed, expresses, in his gifted strain, the common thought which associates the phenomenon of the fall of the leaf with the transitory tenure of all life—the inevitable course of youth to maturity and decrepid age—of uplifted waving greenness and freshness to the sere and withered return to earth and dust. Ask a friend why the leaves fall in autumn. He will answer, "They fall because they die." If the premature phenomenon in an ornamented square of smoky London have suggested the thought, he will connect it with the wearing-out of energy that has done its work, its duty under difficulties—not perhaps without a passing wish for a like repose "from the weariness, the fever, and the fret" of competitive struggle and toil. And when the phenomena of defoliation are witnessed under the more favourable circumstances of the rural garden, they may be compared, as by my old friend Loudon, with the sloughing of dead parts—a state initiated in the leaf "by the cold of autumn and accelerated by the frosts of winter." And such may still be the common notion; it was long my own.

But some summers ago I was led to think a little closer into the matter by an effect of a thunderstorm which took place in July. The lightning struck a tall Elm tree, one branch of which it killed; the leaves became brown, and died, but they did not fall. When autumn came, their bright brethren, fading to a similar tint, fell. When winter frost had set in, and the crisp snow overspread the park like a gigantic bride-cake, the Elm was all stripped, save that thunder-stricken branch, and the only leaves that remained were those that had been killed in midsummer. They were never shed: they rotted off bit by bit. This led me to examine the nature of the attachment of the leaves in some trees in my own garden. The expanded base of the petiole, or leaf-stalk, is attached by continuity of woody tissue, including parenchymal cells, sap-vessels, air-vessels, and the cuticle of the bark, continued from the branch into the stalk. The Plane and Sycamore are good subjects for the examination. Soon a delicate line of the cuticle indicates the coming place of separation; soon also, in the Sycamore and most of our deciduous trees, a tiny bud peeps from the axil or angle between the leaf-stalk and stem. Now, next, I may remark that, watching the autumnal period of the fall, I observed that defoliation was accelerated, not so much by early frost as by unusual warm and open weather in November; and then, especially with the Plane-tree, that many of the leaves which naturally fall were not in the "sere and yellow" state, but were green, as full of life. Even now you may see the difference of colour between such leaf shed whilst living, which I hold in my right hand, and the ordinary withered leaf in my left. My examination, at this period, led me to perceive that the immediate cause or stimulus of the fall was the growth of the baby-bud at the base of the leaf-stalk, which, pressing on the tissues at that part, caused their disintegration and disappearance in a manner analogous to that of "absorption" in the animal economy. Pursuing the examination in different kinds of deciduous trees, I found that the mother-leaf was pushed off in different ways; and that these represented the different ways in which deciduous teeth are displaced by their successors. Thus, in the Plane tree the bud pushes vertically up the middle of the base of the stalk; while in the Sycamore it excavates obliquely the side of the base. The shed Plane leaf shows a conical cavity at the detached part of the petiole, like that at the base of a shed-tooth of the crocodile; the fallen Sycamore leaf shows an oblique lateral depression, like that at the base of the shed tooth of a lizard. In the Plane tree, the central part of the parenchymal cells attaching the stalk are first pressed and successively yield to the growing bud, the disintegrating process spreading to the periphery, not along a transverse, but a conical surface; although, by a sort of sympathy, the epidermis, ere the killing process reaches it, indicates the line of coming solution of continuity. The leaf-stalk may for a while be supported by, being sheathed upon, the bud, after it has been wholly separated from its stem; and the process of this separation provides against any rupture or "bleeding" from sap-vessels. Nothing can show greater contrast than the separated surface of a leaf-stalk thus orderly detached and that of one violently torn off. Mild weather, accelerating the bud-growth, pushes off the leaf before its time; early frost, checking the bud-growth, may turn the colour of the leaf, but delays the fall. Young leaves killed by vernal frosts rot off, but are not shed entire.

You may ask how it goes with Evergreens? Essentially and in the main such varieties depend, as in the Holly and evergreen Oak, upon the time of development of the leaf-bud: the leaves equally falling, but in early summer, when the new buds expand, instead of in the late autumn. I speak on this point, however, which diffidence, in the presence of some friends to whom botanical science owes real progress. They well know the endless variety in the structure and development of leaves. How inapplicable—or seemingly inapplicable—is the theory of the bud-growth to the shedding of those lovely, complex, tripinnatifid leaves of some of the Acacia family; how in Gleditschia—*e.g.*, each leaflet acquiring its golden hue flickers away, leaving the stalk to be the last to fall: how in the case of the filamentary leaves of the Pine tribe, although there is an annual shedding, yet many stay for two or more years before they fall. What I chiefly had in view was to show that, in respect to those ordinary deciduous trees which give us the autumnal fall of the leaf, it is not because one leaf dies, but because another leaf is born: it is a phenomenon that may be associated with perennial and ever-springing life, rather than with decay and death. It is a process, therefore, which, if it naturally at first excites sentiments of sadness, may and ought, when rightly understood, to call up a cheerful and grateful sense of the power that provides ample compensation for seeming loss.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—Flower borders and beds must now be kept neat and clean. Grass lawns should be mown about once in ten days, rolled and swept. Gravel walks should also be cleaned by means of hoeing and raking, or hand picking, and, if necessary, top-dressed with fresh gravel. Deficiencies, if any, amongst herbaceous plants should be made up from the reserve ground; or large crowns that have not hitherto been disturbed may yet be taken up, divided, and transplanted. Mulchings of all kinds must be either removed or concealed under an inch deep or so of soil. Plants of Pampas Grass, the leaves of which have been tied together to protect the crowns, should be divested of their fastenings, as should also Yuccas. Stake Pæonies and other plants likely to be injured on account of want of support. Thin such annuals as have been sown too thickly in flower beds, and transplant Saponaria, Nemophila, Candytuft, &c., from the seed-beds to where they are intended to bloom.

Bedding Plants.—All plants required for summer decoration should now be propagated; yet a few extra plants should be kept in store in case of failure, and for this purpose late-struck cuttings are useful. Where open, airy sheds exist, Pelargoniums may be placed therein, or in frames, or between glass houses, or, if previously well exposed, they may even be set under the shade of thickly-branched trees. When water is required, it should be given in the forenoon, for if watered late in the day the plants are more apt to suffer than if they were comparatively dry. Remove the sashes during fine days from frames containing Calceolarias, Verbenas, Ageratums, &c., but replace and tilt them up a little at night. Such Dahlia cuttings as are not potted plant in frames, and keep them a little close for a time, but after growth has commenced expose them freely and water liberally. The roots from which the cuttings have been taken should also now be planted in frames, and all shoots except three rubbed off each plant. Prick off into boxes of light rich soil, consisting of equal parts of leaf-mould, loam, and washed sand, such seedlings as are yet in seed-pans. Alternantheras, Coleuses, and Iresines may yet be propagated freely, because they have a longer time to remain indoors than plants of a hardier character. Some sub-tropical plants, such as Wigandias, Solanums, Ferdinandas, &c., raised from cuttings this spring, may be potted into 4 or 6-inch pots and kept in them until next spring, when they may be forced for cuttings. All sub-tropical plants for the forthcoming season must yet be kept rather warm and in a growing condition, taking care, however, to keep them near the glass, and to admit fresh air to them as freely as possible.

Forcing-House.—Of Hoteia (Spiræa) japonica have successional supplies, one in cold frames, another in an intermediate pit, and a third in the stove or forcing-house; 6-inch pots are quite large enough for them, good roots being the main cause of success. Syringe the furthest advanced ones twice a day, until they come into bloom; the pots containing them may be placed amongst young Ferns, which will thrive perfectly well under the shade of the Hoteias. Of Coleuses pot on some of the best kinds for specimens, and set them in a position near the glass; the shoots should be well pinched, and a pyramidal form aimed at. Of Rhodanthe Manglesii remove such as are coming into flower to the conservatory, and pinch the tops out of such plants as are advancing too fast. Sow a few more seeds of this fine Everlasting for succession. Of Musk sow some seeds in a pan of light soil, prick off seedlings, and pot the plants pricked off a few weeks ago. Old roots, which make as good plants as seedlings, may also be potted. A few plants inserted in a wire basket, grown in heat for a time, and afterwards transferred to the conservatory, have a fine appearance. Divide some plants of Isolepis gracilis, pot the divisions, and grow them for a time in the forcing-house. Sow some Globe Amaranths, and prick or pot off plants obtained from previous sowings. Sow another lot of Balsams, and pot them into sixty-sized pots, as soon as they are fit to handle; a little bottom heat, and a place quite close to the glass are of great importance to them, and at each potting plant them a little deeper than they were previously, as they emit roots freely along the stem. Start Gloxinias and Achimenes in succession, in the warmest part of the house, and remove them to the conservatory as they come into bloom; Achimenes strike as freely as Verbenas from cuttings.

Orchids.—In the East Indian house maintain a night temperature of from 65° to 70°; 75° will do during the daytime, allowing a little more during bright weather. In the intermediate or Cattleya house the heat may range from 60° to 65° at night, with a rise of 10° during the daytime, or 15° in the case of strong sunheat; in the cool or Odontoglossum-house maintain a temperature of 50° at night, and allow a rise of 10° during the day. As the plants are now in a growing state, a moist atmosphere must be kept up by means of damping the floor, stages, and side walls, and syringing the plants twice a day in bright weather. Keep also the evaporating pans full of water. If water lodges in the crowns of any plants, invert them, so as to permit it to run out. Shading from strong sunshine must also be attended to, so as to protect the young growths, and to preserve the beauty of the flowers. All Orchids requiring top-dressing or shifting should receive that attention at once, and water should be plentifully supplied to such as are growing freely. Keep down insects, for if they are allowed to establish themselves just now they will cause continual annoyance throughout the remainder

Ferns.—Remove [illegible] out of doors, and loosen the surface [illegible] may be on deciduous kinds the same time clean and neat. Roots of these [illegible] making it at transplanted in shady nooks. Hardy Ferns wintered in frames [illegible] greenhouses should have their old fronds cut away, the mould on the surface of the pots cleared off, and the pots themselves either plunged in the fernery in the open air, or the plants turned out of the pots and planted in the soil permanently. In some cases it may be advisable to repot a few, and to keep them growing for conservatory decoration, or for planting in the outdoor fernery, after their fronds have been formed indoors. Greenhouse Ferns are now starting into growth, and if any remain yet unpotted, which require a shift, attend to them at once. Stove Ferns, as a rule, are in a moderately advanced state; consequently heat, moisture, and condensed light, by means of shading, are necessary for the perfect development of their fronds. Filmy Ferns must now remain undisturbed, closely shaded, and sprinkled overhead every morning and in the evening, too, if the weather is very bright and warm. Maintain an equable temperature about these plants by tilting up the lid of the case in which they are growing a little during the daytime and closing it at night.

Window Gardens.—Prepare boxes for window plants. If they are small, they may possibly be accommodated indoors for two or three weeks prior to placing them outside, in which case the plants will get well established before they are subjected to outdoor treatment. The boxes, pots, or pans to be used for window plants should be perforated sufficiently to allow superfluous water to escape readily. A layer of potsherds, small chips of brick or sandstone, should be put in the bottom, then the roughest of the soil, filling up with the prepared compost. Good fresh loam mixed with leaf-mould or some well-decayed manure makes an excellent compost, capable of growing almost anything. Pelargoniums of different kinds, but particularly the green-leaved plain and zonal sorts, also the white variegated-leaved varieties, are all suitable for window decoration, as are also Lobelias, Heliotropes, Fuchsias, Tropæolums, Mignonette, and many other plants. Ivy and likewise Ivy-leaved Pelargoniums are excellent plants for this purpose. Succulents, such as the different kinds of Mesembryanthemum, are likewise very suitable for sunny windows; and Musk, Calceolarias, and similar plants, for positions where they can be kept moist. The variegated Iris is one of the prettiest plants that can be grown for the ornamentation of a window, and its leaves remain a long time untarnished. Perennial hardy plants, with the exception of Creeping Jenny and one or two others, are but short-lived when so treated; but many annuals may be employed with advantage for windows, and, when they have done blooming, they can be pulled up and thrown away, thus making room for Pelargoniums and similar plants, which form a useful succession to them.

Pine-apples.—Where Pines are planted out in pits, suckers put in during winter had better now be lifted and transplanted further apart, as should also plants that are expected soon to show flower. Give water freely now, and keep up a brisk temperature. No shading is necessary, except in the case of newly transplanted plants. Maintain a moist atmosphere by means of damping the paths, walls, and beds, and gently syringe plants in pots in fine weather. In the case of those planted out, a sprinkling from the watering-pot, when watering, will be sufficient.

Vines.—New Grapes from pot Vines are now plentiful; but care should be taken not to cut them before they are quite ripe. Keep the house in which they are growing moderately dry, but enough water must be given to the roots for the proper sustenance of the plants. A little ventilation should be allowed day and night in mild weather, the requisite temperature being maintained by means of fire-heat. Thin both berries and shoots as may be necessary, and maintain a brisk moist temperature in houses in which fruit is swelling. Young Vines in pots that were cut back and started again this spring should be trained upright near the glass, so as to thoroughly mature their wood. Shift Vines propagated this spring into 6, 8, or 10-inch pots, and give every encouragement for the production of strong, firm, and well-ripened wood.

Figs.—Such plants in pots as are ripening their fruit should get sufficient water to sustain a vigorous and healthy constitution, but the supply must be less copious than if the fruit was only swelling. To trees in borders as well as in pots apply some manure water, but should the plants exhibit a tendency to gross growth, water only with pure water. Stop the young shoots at the fourth joint, and do not overcrop.

Peaches and Nectarines.—This season, as a rule, has not been favourable to Peaches, many having fallen off while stoning. Those that have passed that stage should have a temperature of from 60° to 65° at night, allowing a rise of 15° during the day. Attend to disbudding the young shoots and the thinning of the fruit. Syringe the plants twice a day, give air freely, force moderately, and economise sun-heat in preference to allowing too much fire-heat.

Cherries.—For these scarcely any fire-heat will be necessary [illegible] have got over the stoning period, but a little warmth nights be mild [illegible] in the morning will be required. If the indeed, ventilation during [illegible] should be left on the houses; item in Cherry forcing.

Melons.—Apply fresh linings to frames in which the [illegible] important is beginning to decline. Fertilise the flowers both in pits and frames. Melons lately planted should have their shoots trained out, so as to allow them to have abundance of light, and all laterals should be stopped. Good healthy foliage should be encouraged. Prick off or pot singly succession plants, and finally transplant them before their roots become cramped in the pots.

Cucumbers.—Train, stop, and regulate the shoots of these, and do not permit more fruit to remain on each plant than it can bring to perfection. Apply fresh top-dressings to the beds if the roots are making their way thickly through the soil; water abundantly, and syringe freely. Take off cuttings and strike them, for plants obtained in that way are more prolific, and come into bearing sooner than seedlings; artificial fertilisation of the blooms is unnecessary, except in the case of any that are required for seed, in which case one fruit on an old plant is sufficient.

Strawberries.—Early plants of these have, in many cases, produced small fruit this season, but now that the weather is brighter and warmer, better results may reasonably be expected. Water such plants as are ripening fruit sparingly, and transfer them to the fruit room if it be desired to keep the fruit in good condition for a few days longer than it otherwise would be if kept in a warmer situation. Introduce succession plants to the forcing house, in all cases keeping them close to the glass. After the fruit has set and until it begins to colour, apply manure-water occasionally. If there are many flowers on each truss, and the fruit is well formed on the portion nearest the base at the stalk, pinch off the point of the truss, so as to throw increased vigour into the already formed fruit, the best of which is always produced from the lowermost flowers.

Hardy Fruits.—Finish grafting and also pruning of all kinds. Gradually disbud trees on walls as soon as the shoots are sufficiently advanced for that purpose. Attend, also, to the protection of the blooms. Rub away such shoots as rise from the base of Gooseberry bushes, and thin those on the bushes themselves sufficiently to permit a free circulation of air. If this is done now much time is saved, and the operation can be conveniently performed; yet it must be remembered that abundant foliage is necessary for the production of fine fruit.

Kitchen Garden.—Asparagus is now obtained from the open air. Some leave a shoot or two on each plant uncut, whilst others cut all away until the 1st of June. The latter is the proper way; though, under that system, fresh plantations must be made more frequently than if a more natural course was adopted. Thin Parsnips, but not too much at first. Draw earth to Potatoes as they appear above ground, and lightly stir up the drills containing late sorts. Keep up a regular succession of Peas by sowing at proper intervals seasonable kinds, in quantities sufficient to meet the demand. Plant out herbs of different kinds, and transplant Leeks raised in frames. Sow Spinach in succession, also small saladings. Transplant Lettuces in any empty space, and prick out Celery in a bed of rich soil 6 inches deep, on a hard bottom and in a warm position. Sow the main crop of Beet, if not already done. Encourage early Cauliflower by drawing some earth around the plants, so as to form a basin for the reception of manure-water, and keep the hoe at work amongst all growing crops.

ANCIENT EMPLOYMENT OF FLOWERS.

With Mr. Leo Grindon's statement that, in the classics, there is "no allusion to the nosegay or bouquet," I cannot agree. Has Mr. Grindon forgotten the "copia narium" of Horace? These words suggest to me a nearer acquaintance with the sweets of the flower-bed than can be formed from merely walking past them. It is hardly to be supposed that the sensuous Roman of both the Earlier and the Later Empire would content himself with inhaling the distant fragrance, borne on the breath of the morning or the evening zephyr, without an attempt at a nearer appropriation of the sweets which—with an unwonted, and therefore a more attractive, modesty—presented themselves to his all-devouring sense. Such, at least, has never been, not, I shall say, the characteristic of, but the exception to, all we have known of the insatiable appetite for extreme indulgence which will for ever stamp a race whose highest enjoyments were, at the zenith of their prosperity, with the mob, "panis et circenses;" and, in the highest ranks, as Juvenal too truly tells us, the hot breath and the short-lived pleasures of the twilight-covered "fornices" of the Suburra. No; I give the *Romana juventus* credit for one thing, and that is—that they plucked every flower that pleased their fancy. Is it to be supposed that the "juvenis" who had assumed the "toga virilis" would consider *that* a sufficient recommendation in the eyes of the voluptuous and deeper-seeking Roman maidens? Hardly! As in the present day, the tailor's deftest accomplishment must be supplemented at ball or regal *levée* by the indispensable "button-hole," and as Madame Chose's most lovely things must be made far lovelier still by a floral trimming and a hand-holding of a bunch of blossoms, so we cannot rationally conclude that nosegays were quite unknown to the ancients. Mr. Grindon's own quotation—

> "Qualem virgineo demessum pollice florem
> Seu mollis *violæ*, seu languentis *hyacinthi*" (flowers not mentioned as used for chaplets)

—so sufficiently confutes his, perhaps not well-considered, notion on this subject, that I will not further pursue my remarks. I shall only say that, if we possessed a full glossary of the familiar and conversational words of the Augustan and post-Augustan age, which the classics, in their purism, have not preserved to us, I should not be at all surprised to find that "copianarium" had become the recognised word for a nosegay, more especially as its bi-dactylic form would, in its softly-flowing syllables, recommend it not only to the progenitors of the "Lingua Toscana," but also to the ingenious, cæsura-in-the-fifth-place-neglecting, and distraught makers of such hexameters as

> "Perturbebantur Constantinopolitani."

W. M.

New Tying Material.—A material for tying purposes, said to be superior to anything hitherto in use, is noticed in the current number of the *Revue Horticole* under the name of *Natte Müller*. M. Müller, nurseryman, Strasbourg, who first brought it into notice, states that it was some time since imported from Japan into Germany for the purpose of paper-making. This speculation, however, having failed, and the material coming again into the market, it fell into the hands of M. Müller, who was struck with its adaptability for horticultural purposes, as it possesses all the good properties of toughness, pliancy, and softness. On submitting a sample to Professor Koch, M. Müller was informed that it was obtained from the cuticle of the leaves of the Palm, Raphia tædigera. If this is the case, M. Carrière remarks that the account of its importation from Japan must be a mistake, as all the species of Raphia are found only in very warm countries. From whatever source it has come, M. Carrière endorses M. Müller's high estimate of its value to gardeners, and remarks that, with all its pliancy and softness, it is so tough that, without being moistened, it can be tightly knotted without breaking, exactly resembling a piece of twine in this respect. It occurs in strips of about 5 feet in length, and can be sub-divided into portions as fine as thread, which preserve all the tenacity of the larger pieces. A branch dépôt for the sale of the *Natte Müller* has been opened at Paris in the establishment of M. Loise-Chauvière, marchand-grainier, 14, Quai de la Megisserie. In this country it is sold in the trade under the name of "Roffea." For grafting purposes or for general plant tying it is cheaper and much superior to either Russia or Cuba bast. Of the latter, there is always a lot of harsh unusable material, even in the best samples; but there is no waste at all in Roffea, as every bit of it is equally good.

The Yellowstone Valley Park.—Early last year the United States Congress set apart the region about the head waters of the Yellowstone River as a national park; and a New York paper states that the superintendent, Mr. Langford, has issued his first annual report. It appears that a large part of the Yellowstone region remains yet to be explored. Access is obtained to the park from the territory of Montana, for although a portion of the region is included within the limits of Wyoming, a perpendicular wall of basalt, in some places 5,000 feet high, forms a barrier which renders all access from the direction of Wyoming impossible. At present visitors are compelled to enter the Yellowstone region on horseback, and over wild and difficult bridle-paths. Carriage roads, however, can be constructed without much difficulty, and there are no insuperable obstacles in the way of laying down a railway, by which the park may be rendered still more eas[illegible]sible. The wonders of the Yellowstone includ[illegible] comparison with which the geysers of I[illegible] are insignificant; hot springs, vapour sprin[illegible] springs, and mud volcanoes; falls of 350 feet in height; cañons of 5,000 feet in depth; streams thickly impregnated with lime; and mountain and rock scenery of the most imposing character. In the yet unexplored regions of the park other marvels may be discovered, for there seems no limit to the freaks which nature, aided by unlimited supplies of water, both hot and cold, and of steam at incalculably high pressure, has played and continues to play in this wonderful region.

COVENT GARDEN MARKET.

April 25th.

Flowers.—Azaleas, Cytisus, Pelargoniums, Hoteias, Roses, Hydrangeas, &c., form the bulk of plants in pots now in the market. Herbaceous Calceolarias are, however, beginning to make their appearance, and Ferns and Lycopods are furnished in abundance. Cut flowers consist of Stephanotis, Gardenias, Camellias, Azaleas, Cinerarias, Roses (particularly Maréchal Niel), Heaths, Epacrises, Hibbertia Readii, Acacias, Orchids, &c, Callas are also supplied, both in the shape of plants in pots and that of cut flowers. Of spring flower-roots, and, indeed, of herbaceous plants in general, there is a considerable quantity, as well as of hardy climbers, for which there is always a good demand.

Fruit and Vegetables.—French and other continental supplies of fruit are well kept up, but home-grown produce in that way is somewhat limited. Good English Pines are scarce, and only one consignment of Pines has been received from St. Michael's this week. English-grown Grapes, both old and new, are good, and Cucumbers are already getting quite plentiful. Radishes, young Onions, Rhubarb, Seakale, Asparagus, &c., constitute the bulk of home-grown vegetables, which are still somewhat scarce and dear.

Prices of Fruits.—Apples, per half sieve, 3s. to 5s.; Cobs, per lb., 2s. to 2s. 6d.; Grapes, hothouse, per lb., 15s. to 25s.; Lemons, per 100, 6s. to 10s.; Oranges, per 100, 6s. to 12s.; Pears, kitchen, per doz., 1s. to 3s.; dessert, per doz., 6s. to 18s.; Pine-Apples, per lb., 6s. to 10s.; Strawberries, per oz., 9d. to 1s. 6d.; Walnuts, per bushel, 15s. to 30s.; ditto, per 100, 2s. to 2s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100 5s. to 10s.; French, 6s. to 15s.; Beans, Kidney, per 100, 1s. 6d. to 2s. 6d.; Beet, Red, per doz., 1s. to 3s.; Broccoli, per bundle, 9d. to 1s. 6d.; Cabbage, per doz., 1s. to 1s. 6d.; Carrots, per bunch, young, 1s. 6d., old do., 6d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 2s. 6d. to 4s.; Cucumbers, each, 6d. to 2s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 2d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 3s. to 6s.; pickling, per quart, 6d.; Parsley, per doz. bunches, 4s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 5s. to 8s.; Potatoes, per bushel, 4s. to 8s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Savoys, per doz., 2s. to 3s.; Scorzonera, per bundle, 1s.; Seakale, per basket, 1s. to 2s.; Shallots, per lb., 8d.; Spinach, per bushel, 3s. 6d. to 5s.; Turnips, old, per bunch, 3d. to 6d., young do. 2s.

THE GARDEN.

"This is an art
Which does mend nature : change it rather : but
The Art itself is Nature."—*Shakespeare.*

AMONG THE ROSES.

I propose to offer from time to time to the readers of The Garden such notes and thoughts about Roses as may be suggested by the flowers themselves blooming in or out of my greenhouse, and, like the tea-bibbing dame in "Pickwick," "a-swellin' wisibly afore my werry eyes." If, sometimes, these commentaries are hurriedly written, as by one whose engagements are pressing, and whose mind is musing upon many things, I can assure the brotherhood and sisterhood, who love the Rose, that they may rely upon my veracity, however much they may criticise my style. I shall only describe what I see, and draw, not upon my imagination, but from Nature.

So come into the garden, Maud, and let us first take a peep into this wee conservatory, which contains my Roses in pots. I will not dwell upon the older varieties; but two I must select from that bright throng, as specially and invariably beautiful. And, as we gaze admiringly upon those large, globular, pendulous blooms of Souvenir d'un Ami, with its broad blushing petals and its lustrous leaves, are we not sadly reminded, we elder Rosicrucians, of a friend whom we shall see no more among the Roses. No subject of the queen of flowers had a more loyal love than Charles James Perry, not one of her judges was more wise or more righteous than he. Many hundreds of the best Roses grown in England have we criticised together as censors; often have we met as competitors—always as friends. There was ever a kindly pleasantness in his face and in his speech—something of the brightness and the freshness of the garden which he tended so fondly at his charming home among "The Cedars;" and many of us will miss, not only his excellent discrimination as an arbiter (there are not, I believe, a dozen men living who understand the merits of a Rose as he did), his novelties as a raiser (in Verbenas matchless), his successful displays as an exhibitor, but his genial society as a cheerful companion and an earnest, honourable man.

So we will pass on, with a sigh and with a hope, to the other Rose, which I would particularise from the crowd of old favourites, as being, perhaps, the most satisfactory of all which are grown under glass—*the* Maréchal. I call it most satisfactory, not only because of its beauty, its golden beauty, its symmetrical form, and exquisite fragrance, but because of its adaptation to all requirements, blooming abundantly, as with judicious treatment it will, in a pot of moderate size, when but a twelvemonth old, or in a couple of years, when planted in a rich border, making shoots 18 feet in length, and giving scores of its glorious Roses all along the pillars and rafters of its home. I have a plant now, little more than a year old, which is trained on a wire balloon some 4 feet in height, and is covered with blooms; in short, the growth of Maréchal Niel *upon the Briar* is wonderful. Some three weeks ago, Mr. Prince, of Oxford, sent me a box containing, not four-and-twenty blackbirds baked in a pie, but four-and-twenty seedling Briars with Maréchal Niel buds, just ready for a start, in each. I potted them in soil which a Rose-grower would almost like to eat, placed them in a warm vinery, and I have just measured several of the shoots—18 inches of bright, healthful growth.

We will not dwell on climbing Devoniensis, although it is in my opinion the second Rose in merit for culture under glass (I am leaving Cloth of Gold out of the question), because it requires a large space for the development of its beauty, and therefore is not everybody's Rose; but we will proceed to the newer varieties. Of those sent out by the French growers in the autumn of 1871, and by the English in the spring of 1872, I can commend the following:—Baronne Louise Uxkull, a grand Rose, with the abundance of petal we Rosarians love, and much resembling Madame Boll in flower, leaf, and constitution. It is pleasant to note that many of the 1872 Roses have a healthful vigour, more like that of the old Hybrid Perpetuals, Madame Laffay, Baronne Prevost, and Willam Jesse, than some of the more recent novelties, which are the offspring of intermarriages between the Hybrid Perpetual and the China Rose. Baronne Louise Uxkull is also a very fragrant Rose. Etienne Levet, a charming Rose, of very regular outline, and having its petals arranged in the Camellia pattern, a bright rose colour, with fine foliage. It is, in stable phrase, "a stayer," and as a show Rose will, I think, prove worthy of its name, Stephen, and be crowned as a conqueror. Madame George Schwartz (these successful raisers of Roses naturally and rightly give their own names, or the names of their kinsfolk, to their most promising *débutantes*) is a very handsome lady, large and lovely, and quite worthy to hold office in the Court of Queen Rose; Lyonnais, a light silvery pink, with abundance of petal, somewhat reminding us of Monsieur Noman, and likely, I prophecy, to be successful on "the stage"; President Thiers, a noble flower, far more king-like than republican, albeit fiery red, sure to be a favourite, like his synonym, both in private and in Assemblies of the people (commonly called Rose Shows); and lastly (for I have not as yet bloomed Docteur de Chalus, Jeanne Gros, Madame Hippolyte Jamain, or Richard Wallace, though I have received commendatory reports), let those who say that our new Roses are deficient in perfume, apply their nasal powers, to sniff and not to sneer, over Souvenir de Julie Gonod; and if La France has not already made them ashamed of their calumnies, now, at all events, they must retract, unless they be "sans nose, sans everything."

But I am forgetting the tea-scented Roses, and they are deserving of much commemoration. I have not flowered Madame Jules Margottin, but Madame Marie Van Houtte is quite one of the freest, prettiest "Teas" in cultivation. A small plant, which only came to me last April (a gift from Mr. Bennett, of Salisbury), is now just finishing a second crop of flowers, and growing away in all directions for another efflorescence. The flower is of good size and globular form, pale yellow, with a pink tinge on some of the outer petals. I strongly recommend it as a pot Rose. My plant of Madame Cecile Berthod is not a strong one, but the Roses are such a bright clear yellow, that I infer something very attractive when there is more vigour.

Of this year's Roses, I have heard favourable accounts, from very reliable Rosarians, of Monsieur Claude Levet and Monsieur Pierre Seletzsky, and I have seen a small bloom of the much-lauded Madame Lacharme (on a plant kindly sent to me by my friend C. Turner), and also some full-sized petals from a flower grown at Slough. Whether this "White Jules Margottin" will prove to be "the best white Rose in cultivation," and so create as much sensation as Wilkie Collins' "Woman in White," appears to me very questionable. I believe that the Rose will be an acquisition, but it is a French white, *i.e.*, a white with strong proclivities to pink, and neither the Baroness Rothschild nor Marguerite de St. Amand need fear this new "claimant" to supremacy.

Concerning Rose trees *al fresco*, I have not much to say at present, for the simple reason that I have stubbed up my Rose garden. Start not, my dear old floral friends! mourn not for me, dear Brothers of the Rose! my brain, believe me, is not more soft—my heart, I assure you, is not more hard, than heretofore. On the contrary, I know myself to be a wiser, truer gardener than I have been for years. Not only can I say, with the grand old King in the tragedy, "I am not mad," but I can thankfully congratulate myself on having just expelled from my system certain incipient symptoms of insanity. I have just thoroughly recovered from all indications of a tendency to that horrible mania, known to the profession as Bedlaming, I mean Bedding, out. Consequently, I have to alter my garden, and for a time my Rosery is displaced.

But I still possess, in the place of vegetables, *i.e.* in my kitchen garden, certain consolations, in the form of 2,000 of the best Briars I ever had, budded last July, and *breaking* beautifully. From these I hope to derive shortly such happiness as only Rosarians know, and some information which may prove acceptable to those who read The Garden.

S. Reynolds Hole.

NOTES OF THE WEEK.

—— IT is announced that the People's Garden at Old Oak Common, Willesden, will be opened for the season, to members and their friends, this day.

—— SERIOUS mischief has been done to the Vines in France by the frosts at the end of last week. The prospects of the champagne vintage, especially, are much imperilled.

—— ALONG with the cleansing of the lake in Victoria Park, and its re-filling with water, many other improvements are in progress. A new concrete wall, with granite coping, has been erected around it. The islands which dot its surface have all been re-covered with turf, as have also the various surrounding slopes. Several fresh shrubberies have also been planted, and ornamental rockeries erected.

—— MR. WM. PAUL'S exhibition of Roses in the gardens of the Royal Horticultural Society, at South Kensington, commences to-day, and will be continued until Saturday next. In addition to Roses, of which there is a fine display, there are also other attractions in the shape of ornamental plants of other kinds well worth inspection.

—— A GENTLEMAN has made an offer to the Westminster District Board, through his solicitors, to contribute £1,000 towards the cost of retaining as an open space the vacant land lying between Abingdon-street and the Thames, which the Government has the power of disposing of for building purposes. The District Board transmitted the communication to the Metropolitan Board of Works, and that Board has referred the matter to the consideration of a committee.

—— EPIDENDRUM CNEMIDOPHORUM, a species introduced by the late Mr. Skinner from Guatemala, where it is found at an elevation of 8,000 feet, is now to be seen in great beauty at Messrs. Veitch's. It has stood in the corner of the Odontoglossum house for the last four years, has been repotted once, and is now producing, as it does annually, a great profusion of flowers. The flower-spikes are terminal, and somewhat globular in shape, about two and a half dozen flowers being on each spike; the blossoms are of a yellow colour, spotted with brown inside, but white tinged with lilac outside; the lip is pink and the throat white.

—— A SECOND plant of the lovely Odontoglossum vexillarium is also now in flower at Messrs. Veitch's. That which bloomed first had blossoms resembling in shape those of a Miltonia or Odontoglossum Phalænopsis, but much larger, especially the lip, which was quite flat, and in colour they were delicate rosy lilac, without spot or stripe. The plant now in bloom bears two spikes on one bulb, and six flowers on each spike, and is quite a distinct variety from the one just alluded to. Its blossoms are of the same shape and waxy substance, but their colour is much darker, being, in fact, a deep violet peach, tinged with yellow in the centre, and conspicuously marked with three longitudinal violet lines—altogether a superb flower.

—— PROFESSOR DU BREUIL last week recommenced his valuable course of public lectures on arboriculture in the municipal school of the Bois de Vincennes at Paris, in which he will discuss the best practical treatment of fruit trees during their period of growth. These lectures are free to all who choose to attend them, and the young gardeners of Paris, in thus obtaining first-class gratuitous instruction in at least one branch of their profession, possess an opportunity of self improvement which, we regret to reflect, is not open to their brethren in our own metropolis.

—— AT the present moment, imported fruit of the Japanese Kaki are offered for sale in the shop windows of MM. Cuvillier, et frères, marchands de comestibles, 16, Rue de la Paix, Paris. They have been apparently dried and prepared in the same manner as our dried Figs and Raisins. The fruit, in their dried state, are 3 inches or more in length, and are described as having a firm and slightly gelatinous substance, of a reddish-brown colour, and sweet and agreeable to the taste. Many species of Kaki are cultivated in Japan, with fruit varying in dimensions from the size of a large fowl's egg to that of a man's fist. When fully ripe, they are said by M. Coignet to be dried in the sun and then preserved in flour, when they are equal to the best dried Figs. M. Carrière, however, states that, whether from habit or not, he prefers the Figs.

—— IN Dr. Schomburgk's report on the Botanic Garden at Adelaide, a copy of which has just reached us, it is stated that "The manufacture of scents and essences is one of the most important. If we consider that British India and Europe consume annually about 150,000 gallons of handkerchief perfume alone, and that the revenue from imported perfumes in England is estimated at about £50,000, we may judge of the immense quantity of material used for perfumes. Most of the flowers which provide the material for perfumes grow luxuriantly with us—viz., Jasmine, Mignonette, Verbena, Rose, Lavender, Acacia Farnesiana, Heliotrope, Rosemary, Peppermint, Violets, Oranges, &c. These plants thrive, probably, in greater perfection here than in any part of the world. No doubt South Australia should be a perfume-producing country, as we see here flourishing some of the most valuable scent plants. In proof of the value of perfumes, it may be stated that one acre of Jasmine will produce flowers to the value of £250 annually; Rose trees, £75; Orange trees, £50; Violets, £160; Casse trees (Acacia Farnesiana), £90; Geranium plants (Pelargonium odoratissimum), £200; and Lavender, £30."

—— ACCORDING to a communication by Professor Hallier, in the *Zeitschrift für Parisitenkunde*, a new Potato-disease made its appearance last autumn at Apolda, near Jena. In this new form of disease the fungus attacks the tuber at once, and not the leaves.

—— OF the beautiful Brazilian Colax jugosus there are at present some nice plants in flower at Mr. William Bull's. The sepals are creamy white, petals and lip white striped and spotted with purplish violet. Mr. Bull has just received a large importation of Odontoglossum coronarium, and of other South American Orchids.

—— OF Vanda cærulescens, a rare and beautiful blue-flowered kind, a considerable importation from Burmah was sold the other day at Stevens'. A mass of it, consisting of eleven strong plants, realised £20. Of Vanda Denisoniana, another rare species from the same district, six plants fetched £11, and Dendrobium thyrsiflorum, a fine showy species, fetched £13 13s. The whole amount realised for 443 lots was a little over £889.

—— THE magnificent collection of hardy Rhododendrons belonging to Messrs. J. Waterer & Sons, Bagshot, which, for the last twenty-three years, has proved so attractive at the Royal Botanic Gardens, Regent's Park, will this year be exhibited in Alexandra Park, Muswell Hill, where a large space is being covered for this purpose. From the appearance of the plants, the show promises to be one of the best of the kind ever seen.

—— OF Epidendrum bicornutum, a recently imported plant is now in flower at Kew. The flower-spike, which proceeds from the top of the pseudo-bulb, bears five beautiful pure white blossoms, delicately spotted on the lip with violet, and tinged with yellow in the centre. This Epidendrum has been found somewhat difficult to flower, such plants of it as have blossomed being usually newly imported ones, in which the embryo flowers had been formed before importation.

—— CAMAROTIS PURPUREA may now be seen at Messrs. Veitch's, bearing thirteen rosy purple Aërides-like clusters of flowers. Various ways have been tried to induce this plant to flower profusely, but none has answered so well as placing it on an erect wooden trellis in a pot filled with sphagnum and broken crocks. The roots creep around the woodwork, but seldom penetrate the contents of the pot, which, however, serves to keep the trellis steady. It enjoys the temperature of the Cattleya or East India house.

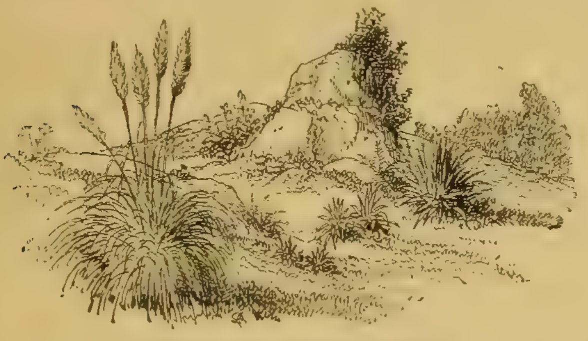
—— FOR the opportunity of inspecting some handsome blooms and leaves of Cyclamen vernum we are indebted to Mr. Jas. Atkins, of Painswick, who has also furnished us with the following remarks respecting them:—"I send you," he says, "a few flowers and leaves of Cyclamen repandum of Sibthorp, vernum of most of the continental botanists, including Decandolle, Bertaloni, Reichenbach, &c., the C. vernum of L'Obel (1581), and C. verno tempore flor. of Clusius (1601). Both of the latter publish a very good figure of it from the same block. Those sent are from a common garden frame, in which they are turned out, and the whole of which is now one mass of beauty with them. It grows well with me out of doors in sheltered nooks, with perfect drainage and shade from mid-day sun." The flowers—which are of a beautiful rosy crimson, and the foliage, which is ample, and prettily marked with silver—of Mr. Atkins's plant are the finest and most luxuriant we have ever seen in any specimen of this Cyclamen.

—— OF Anthurium Scherzerianum there are several varieties, some having broad leaves, others narrow ones, some arched leaves and others foliage almost erect. The flowers, too, of this fine stove-plant are as variable as the leaves, for we find among them long, narrow spathes, broad spathes, and others short and broad, almost approaching a circular form. In some, moreover, the spadix is scarcely curled, while in others there are two, and even three curls, but one striking characteristic is invariably present in all varieties, and that is the intensely brilliant scarlet colour. One of the very finest of the different varieties of this Anthurium is that called A. Scherzerianum magnificum, in the possession of Messrs. Osborn, the flower spathes of which are some 3½ inches in length and 2¼ inches in breadth, brilliant scarlet in colour, and with double, and in some cases even triple curled spadices. It is the parent of a numerous progeny, of which examples may now be seen in the Fulham nurseries, all having precisely the same characteristics as itself.

THE FLOWER GARDEN.

A ROCKY KNOLL IN OSMASTON GARDENS.

It is remarkable how a little peep or just a square yard or two of ground, with a few wild flowers, or other plants, in happy juxtaposition to a water margin or an old stone, often conveys to the mind an impression of sweetness connected with that particular spot never afterwards lost, and gives to it a character which for ever distinguishes it from all other places with which one is acquainted. All over England, and indeed, all over the world, such little spots often occur; in gardens they turn up in places in which one would least expect them, and as such features are everywhere so desirable, we hope from time to time to put before our readers little sketches of this description, the introduction of which into gardens is much needed. Gardens laid out to exhibit some one special scene only, as for instance a grand walk or terrace without a proper termination, are as disappointing as it is pleasant to find places in which, at unexpected corners, one comes upon little bits of scenery which have evidently emanated from minds and hands imbued with a true sense of the beautiful. The knoll of rock which we here figure was sketched at Osmaston Manor, and both it and its surroundings strikingly exhibit the taste and skill bestowed on this charming little bit of garden scenery; the Yuccas and their position, the little Ferns and Primroses, to say nothing of the lots of little things that could not be shown in a woodcut, the placing of the stones, the little Yews or Holly clinging to the largest one, the flowering Pampas Grass, even the very formation of the ground, rolling gently over in exact agreement with the positions of the rocks—all these put together go to produce a feature more pleasing than many a flower garden, though it is limited in size. D



Rocky Knoll in Osmaston Gardens.

OUTDOOR HYACINTHS.

What becomes of old Hyacinth bulbs? Year after year thousands are imported, special exhibitions are held for them, and large sums are given in prizes for them; but what is the fate of the bulbs after they have once flowered? We are sometimes told that they may be used a second year for "dotting about" in shrubbery borders, but is it not a fact that, though grown by everyone, Hyacinths are hardly what one might call cultivated in England at all? Do they not come ready made to our hands from the Dutch growers? And this has led me sometimes to think that our horticultural societies might be a little less liberal in their prize lists to foreign raised Hyacinths, and might do something to encourage home-grown plants. For a year or two they would be poor no doubt; after which I believe our exhibitors would be able, if they took the matter fairly in hand, to beat the foreign bulbs.

My object in writing, however, is not to discuss the question of exhibiting, of which I have no practical knowledge, but to discredit the too generally received idea that the only place for Hyacinths after flowering is the rubbish-heap, and to plead for their more general use in the open garden; and I am led to do this by seeing with how little trouble a good show may be made with them. Mr. David Thomson, in his "Handy Book of the Flower Garden," tells us that "varieties suitable for outdoor decoration can now be purchased so cheap that it is scarcely worth the trouble to save the bulbs;" and Mr. Fleming, in his "Spring and Winter Flower Gardening at Cliveden," says: "We have tried to renew the old bulbs, and also by well-prepared beds, to grow the offsets, but in both cases they are more expensive than purchasing fresh bulbs," and though this may be true, if we content ourselves with the unnamed bulbs sold cheaply by the hundred, yet I would advise owners of small gardens, at least, to buy good named varieties and to take care of them. I have now nearly 100 in flower, the spikes of which, if not fit for exhibition, are quite equal to the average of those used for conservatory decoration or sold in Covent Garden Market. These, with about twice as many smaller bulbs of various sizes (whose few bells by the way are often more useful as cut flowers than large spikes) are the produce of sixteen Hyacinths purchased in 1866, and twenty added in 1870.

Each set was grown in pots the first year (a loss of two years so far as increase of stock is concerned), and, after flowering, the bulbs were turned out of the pots into the open ground, without disturbing the roots, kept watered until the foliage began to look yellow, and afterwards taken up and dried. Subsequently they have been planted in the open ground, about the end of October in each year, at about 3 inches deep, and taken up when the bulbs were ripe. The soil of my garden is a sandy loam, with a subsoil of red sand, and consequently always free from standing water. I give a liberal supply of well-decayed stable manure and leaf-mould at planting time, digging the bed from 2 to 3 feet deep at least, and placing the manure near the bottom. Soot and lime are useful by way of a change, if the soil seems not to want more stable manure; and I have read, though I have not tried it, that salt is good. The main items as regards success seem to be a rich light soil, well drained and deep, that the roots may grow naturally—that is, straight down, for I believe want of depth for the roots is one of the reasons why the bulbs deteriorate under pot culture—care of the foliage until it dies down, and shallow planting, that the bulbs may ripen thoroughly. This they will not do until the end of June, but the summer planting of the beds need not be delayed on that account, as, if the leaves are carefully tied up, bedding plants may be put between them.

In old gardening books, elaborate instructions may be found for the cultivation of Hyacinths, but the directions for protection and shading are enough to frighten any one but an inveterate florist, and to make the garden unsightly if carried out. At the same time it must be admitted that shading considerably prolongs the time of flowering. Modern books seem to treat the subject after the manner of the quotations I have given. W.

RAMONDIA PYRENAICA AND FRENCH CULTURE.

I brought back from Gavarni, about eight years ago, a fine specimen of this unique little plant, which I found growing in a small fissure on a large flat rock, without any apparent soil, and exposed to the full blaze of the sun. The position seemed to agree with it, as it had three stalks each, bearing a full quantity of blossoms. I attempted to imitate the site in which I found it in my garden, by planting it on a small heap of crocks, on which it lived and grew, but did not blossom. I have since then tried every variety of soil and culture, and although it has increased and been multiplied by means of offsets into many plants, none of them have ever yielded more than an odd blossom or two every two or three years. Terre de Bruyère, or heath mould, the French panacea for all delicate or fastidious plants, has no effect on it; indoors or out-of-doors, in pot or in the open ground, it is all the same, and until I read the article in No. 73 of The Garden (see p. 277) I had concluded that it was naturally a shy bloomer. I should, therefore, be glad to know exactly how the plants at Benthall Hall are managed. Terre de Bruyère, which is nothing more or less than the *detritus* of heath on a sandy bottom, and consequently mingled with sand, is mostly found in forests and sometimes on sandy commons. The *detritus* of heath growing on bogs, although strictly speaking heath mould, is not "terre de Bruyère" in the French acceptance of the term, and could never answer the purposes to which the latter is applied. In terre de Bruyère it may be said that all plants will live, although all may not exactly thrive; and the number of those that will thrive (especially the hard-wooded ones) is legion, while many cannot be got to grow in pots without it. The term "sandy loam," so often used by English writers on gardening, is a difficult one for French horticulturists to understand; if, for instance, we look out the word "Loam" in one of the last and best of English Dictionaries (Chambers', 1872), we find the definition to be "a muddy soil of clay, sand, lime, animal and vegetable matter." Now, whatever effect such a soil may have on a delicate potted plant in England, it would be pretty nearly poison to it here. Then again, if we look for the word "Peat," in explanation of peaty loam, we find it described as "a vegetable substance like turf, found in boggy places, and used as fuel;" in other words, what the Irish call "turf," and the French "tourbe." Now we know that here, as in Ireland, it takes a great deal of sand carting and bog burning to get even a stunted Scotch Fir to grow in it. Hence the impossibility of even attempting to follow here any British mode of pot culture as usually described, and the difficulty is generally solved by placing the new introduction, which almost always arrives through British importation, into plain terre de Bruyère; and not only that, but the English compost attached to it has often to be cleared away and replaced by terre de Bruyère, or the plant will linger on for awhile and finally die off. Fredk. Palmer.

Versailles.

NEW, RARE, OR NEGLECTED ALPINE PLANTS.

(*Continued from p.* 316.)

Lithospermum Gastoni (Gaston's Lithospermum).—A rare and beautiful species from the Pyrenees, with erect herbaceous stems about a foot high, which from May to August bear terminal clusters of large bright sky-blue flowers, about twice the size of those of *L. prostratum* (commonly sold under the erroneous name of *L. fruticosum*). Leaves obovate lance-shaped. Grows freely on rock-work or in any open border in rich well-drained loam.

Linum viscosum (Viscid Linum).—A fine herbaceous species from the Pyrenees, with slightly branching downy stems from 1 foot to 1½ foot high. Blooms fom May to August. Flowers nearly an inch across, of a rich rosy lilac colour, in an erect corymb. Leaves alternate, lance-shaped, covered with feeble whitish hairs and viscid glands. A fine subject for the rock-garden or choice border, in well-drained, moist, sandy loam.

Linum salsoloides (Heath-like Linum).—A hardy, dwarf, half-shrubby species, somewhat like a dwarf Heath or Leschenaultia, with the stem twisted at the base. It grows from 3 to 6 inches high, and blooms in June and July, producing an abundance of flowers which are each an inch across, and white with a purple centre or eye. The leaves are linear, smooth, and scattered; the lower ones shorter and almost imbricated. A native of the south of Europe, this plant is not only well adapted for rockwork, but is also a very pretty object on the common border, in well drained sandy soil.

Mertensia dahurica (Dahurian Gromwell).—This plant, which was formerly known under the name of *Pulmonaria dahurica*, although of a very slender habit, and liable to be broken by high winds, is perfectly hardy, and was formerly often to be met with in British gardens. It grows from 6 inches to a foot high, with erect branching stems, which are angular and furrowed, and clothed with decumbent white hairs. It blooms in June, producing handsome bright azure-blue drooping flowers in racemose panicles. The leaves are ovate, roughish, slightly glaucous, and clothed with small decumbent hairs. It is a very pretty plant, and suited either for the rock-garden or borders, where it should be planted in a sheltered nook in a mixture of peat and loam. It is easily propagated by division or from seed.

Mitchella repens (Variegated Partridge Berry).—This is one of the most interesting of the pretty woodland plants that accompany the Ground Laurel (*Epigæa*), the tree Lycopodium, the Rattlesnake Plantain (*Goodyera*), &c., in the Pine woods of North America. It is a smooth and trailing little evergreen herb, with roundish shining leaves, and minute stipules. The flowers are white, sometimes tinged with purple, and bear pretty scarlet berries in autumn. I saw it in Long Island, running about in the Moss, &c., at the bottom of Pine trees, and it occurred to me at the time that it would be a charming addition to shady parts of our rock-gardens, hardy ferneries, &c., in which it would thrive under the same conditions as the Pyrolas, the Linnæa, &c. It is named after Dr. John Mitchell, an old Virginian botanist and correspondent of Linnæus.

Muscari armeniacum (Armenian Grape Hyacinth).—A strikingly beautiful and scarce species, growing about 6 inches high and flowering in May, when it produces a dense spike of flowers of a fine cobalt-blue colour with three small yellow dots near the mouth of the corolla. The spike is 2½ inches or more in length, and the flowers are most agreeably fragrant. The leaves are about 9 inches long, ribbon-like, concave, and pointed. An exquisite plant for level spots on rock-work, for the bulb-garden, or for borders in light soil.

Muscari Heldreichii (Greek Grape Hyacinth).—A beautiful, and as yet rare, kind from Greece about 14½ inches high, with flowers of a fine deep sky-blue with white mouth, somewhat like those of *M. botryoides*, but nearly twice as large, and arranged in a longer spike. Leaves about 4 inches long, flat, like those of *M. commutatum*, but not open at the top, like those of that species. A fine subject for the rock-garden or the choice border, in deep sandy soil. Comes into bloom in the end of March.

Orchis foliosa (Leafy Orchis).—A very handsome and showy Orchis, found on rocky banks in the island of Madeira, and growing from 1½ to 2½ feet high. It flowers in May, when it produces a very great number of purplish flowers in a large ovate or oblong-ovate spike about 9 inches long and 3 inches across. The leaves are oblong, unspotted, the lower ones obtuse. May be grown in sheltered nooks in the rock-garden, or in the mixed border in deep light soil.

Oxalis lasiandra (Woolly-stamened Oxalis).—A singular and handsome Mexican species, growing from 9 to 18 inches high, and producing umbels of large crimson flowers in summer—about twenty flowers in each umbel. The leaves are all radical and digitate; the leaflets (7 to 9 in number) being 3 inches long and 1 inch broad, of an oval spoon-shape, dark green above, paler underneath, and spotted with crimson. It is a fine plant either for the rock-garden or borders, and should have a warm position in well-drained sandy soil.

Opuntia Rafinesquii (Hardy Opuntia).—A dwarf spreading Cactus, forming clusters of thick, ovate, very green joints, each 3 or 4 inches long and about 3 inches broad, studded with small tufts of minute, sharp-pointed, reddish, hair-like spines. Flowers in summer, of a bright sulphur yellow. The fruit is said to be edible and "like a Gooseberry." North America. This Opuntia is a very free bloomer, and its dwarf, branching habit makes it better suited for out-of-door vase or rock-work culture than for a border. For several years past, the hardiness of O. Rafinesquii in the climate of London and Paris has been a subject of remark, and various persons in England and northern France have testified to its hardiness. The fact, however, that it stands and grows well in a London back-garden, deprived to a great extent of the sun, is as much proof as we need in that respect. This hardy species resists much greater cold than we ever have in Britain, and it is probable we shall find that half a dozen or more species of Cactus are quite as hardy. Along the line of the Pacific Railway, Cacti are abundant in some places—in districts frosty and silvered with snow when I passed over them in November, 1870, and on the flanks of the Wassatch Mountain, near Salt Lake City, deeply covered with snow during the winter. It is desirable, in gathering the small mountain plants there, and in sitting down on the ground, to look well for a small, poignantly prickly Cactus, with round stems, which abounds there, and which communicates a peculiarly acrid sting to all soft, fleshy parts that touch it. I gathered this in company with Astragaluses and other plants, which are usually termed alpine. In the northern States of America, which are very cold in winter, as everybody knows, there are three species of hardy Opuntias—*O. vulgaris* (the common Prickly Pear), which goes as far north as New England; *O.*

Rafinesquii, in Wisconsin and Kentucky; and *O. missouriensis*, in Wisconsin and towards the great plains. And from what one sees along the Pacific route, it is very likely a greater number of Cacti go north along the Rocky Mountains' dry plains and sierras than we find on the eastern side of the continent. It is very probable we shall some day have quite a group of dwarf hardy Cacti keeping company with the Houseleeks on our rock-gardens, and rivalling them in hardiness. They should be planted on the drier parts of the rock-garden, on dry sunny banks, on the edges of old walls, old bridges, ruins, &c. They will also thrive on borders, but are most appropriately placed in the positions above named. Mr. James Atkins, of Painswick, informs me that he has grown a variety of *Opuntia vulgaris*, which he found in Piedmont, for upwards of 18 years without the slightest protection on the part of his rock-work which has a S.W. aspect.

(*To be continued.*)

CAMPANULA TURBINATA ELEGANS.

Among dwarf Campanulas suitable for beds this is the most ornamental in the large and beautiful family of bell-flowers, forming, as it does, a compact leaf growth, and yielding from seed a mass of comparatively large, rich, purplish-blue, white, and porcelain-white flowers during the summer months. To have it in bloom the first season, it should be sown in the earliest spring months, and thus treated it will flower in the summer and autumn, or, if the plants bedded one season are again divided for planting in May, these will bloom effectively in the summer months, and, if sown in May, vigorous plants will be secured for the following year. Campanula turbinata elegans, sent out by Messrs. E. G. Henderson, is a hybrid between C. turbinata and C. carpatica, and it is greatly superior to both its parents as a decorative summer flower.

Campanula turbinata elegans.

PRIMROSES.

These are finer here than usual this season. Each plant is crowned with flowers, to the hiding almost of the tufted crowns of fine clean leaves. The Five-fingers, as they are commonly called here, or Cowslip-stemmed Primroses, are equally fine. The two together by the thousand make such a display of Primroses as I hardly ever remember to have seen. These common Primroses are better, in many respects, than all the uncommon varieties. They remind one of woods and groves, and sunny hedge-banks. Even the white and the orange have a garden character about them, which increases with every tint of colour, until we land amid Polyanthuses and Auriculas. But for skirting woods and for infusing into pleasure grounds the sweetest breath of spring, commend me to the common Primroses. Doubtless we have room enough in our spring gardens for all possible varieties of Primrose; but I have some fear that, with our rage for novelties, we may discard our common varieties. This would be an irreparable loss to our gardens, too dearly purchased by the establishment of the Abyssinian or Japan Primrose in its stead. The former is fragrant almost as a Violet, and the latter pretty enough in its way; but neither have about them the simple beauty of our common Primroses, which, in masses, as decorative plants, are unequalled. It seems, too, almost a pity to mar the effect which they produce by mixing them with anything else. Yet have I seen, on many a bank, Primroses made more attractive by being intermixed with early blossoms of the Veronica Chamædrys. Acting on this hint, the Primroses here have been pincushioned in various directions with Myosotis dissitiflora thrown in here and there. I have also observed how, when overhung with plants of Ribes sanguineum, the yellow Primroses seemed to become more yellow and more lovely on account of the contrast. Again, Primroses evidently like a wet season. To the excessive moisture of the late summer, the mildness as well as wetness of the past winter, I attribute their unusual richness and abundance this year. Even the double lilac, white, and others are fuller of flower and more robust in health than usual. Who has got a stock of the double yellow, red, and crimson, or port-wine colours of these grand old plants now? On the mixed borders, beside Daisies or early Heartsease and Violets, how beautiful these are, and how rich in old memories and home associations! How many of us seem at times to forget that, in floriculture, it is by no means necessary to be off with the old loves before we are on with the new; and even if that were the case, how many of us would still elect to be true to the old favourites that first bound our hearts to the gentle art, and, among these, how potent is the Primrose!

D. T. Fish.

FLOWERS FOR THE MARKET.

There are a certain few early-blooming hardy plants of easy cultivation and effective when in flower, that I am astonished have not been ere now made useful and profitable for market purposes, as I am sure they would sell freely and by thousands if brought into Covent Garden. If a man were about to embark in the growth of these hardy plants he would require about an acre of good holding soil, a few hundred feet length of cold pits and frames, a roomy potting shed, a large stock of 60-sized pots, and plenty of fairly good soil with which to fill them. Then it would be necessary to secure and to work up as speedily as possible a stock of the plants to be operated upon, and having once done that I think it would be possible for a full tide of prosperity to set in upon him. The first, and possibly most beautiful plant among those that I would recommend is the early dwarf Myosotis dissitiflora, to secure a good stock of which it would be necessary to sow about an ounce of the seed as soon as it can be obtained after ripening, say early in July, either in boxes or in pans or in frames. With care and good seed, probably from 5,000 to 6,000 seedling plants would be obtained, and these would merely require, when large enough, to be pricked out in nice friable soil, about 4 inches apart each way, and to be kept well watered until they were thoroughly established. Early in November, a thousand or so should be lifted with small balls, potted, and then placed in frames close to the glass, letting them have all the air possible on dry days, and a little covering during frosty weather. Two or three other batches should also be lifted during the winter, so that a succession might be maintained; and if the first batch could have the advantage of a little extra warmth, or be taken into a greenhouse, they would be in full flower fit for market by the end of February, and possibly earlier. Some plants should be left for seed, as in no case should old propagated plants be trusted; they are not worth twopence for any purpose. This Forget-me-not grows in such neat little bunches, and is so beautiful, that it would become a universal favourite if people could purchase it cheaply and in abundance. Another charming plant, with which Londoners are as yet comparatively unfamiliar, is the golden-blotched double red Daisy, which, even out of flower, in the depth of winter, is a veritable gem. This plant would, I believe, sell either in or out of pots literally by thousands all through the winter, from November onwards. Persons who see it for the first time are enchanted with it, and whether seen under heavy rains or in pleasant sunshine it is alike charming. It can be propagated just as easily and as freely as the common double kinds. One plant, if it does well through the summer, will make ten or a dozen in October, and these, again, will grow into strong material by Christmas. As some stock would have to be retained, the smaller plants could be kept for that purpose. Some potted up and placed under glass would fetch a good price. Then what beautiful things for pot work, if properly managed, are the double white and mauve-coloured Primroses! These must be kept fresh, green, and growing all through the summer, and be lifted and pulled to pieces about Michaelmas, the strongest being potted into 60-sized pots, and the remainder planted thickly in beds, so that they may be lifted as required. Five hundred plants of each of these planted out now would, with good cultivation and plenty of water in hot weather, make 5,000 of each colour next autumn, so that a large stock could soon be obtained, and thus, with diligence and care, the foundation might soon be laid of a good business. Other plants could also be introduced of a like character, but all should be hardy, and easily and cheaply grown. A. D.

Rose and Clematis Covered Screen.—I have erected a screen, so as to part a newly made croquet-ground from a fruit-garden. I purpose planting two Roses, one light and dark alternately, then a Clematis, then two Roses, to twine together and form an archway on the top. The screen is composed of sixteen rough Fir poles, 8 or 9 feet high, and what I want is the most suitable Roses and Clematises with which to cover it.—A Subscriber. [Use free-growing sorts of evergreen and Ayrshire Roses, say the following: White: Felicité Perpetuelle, Rampante, Thoresbyana, and the Garland. Red: Boursault Amadis, Flora, Princess Maria, and Russelliana. The Clematises may consist of Lanuginosa nivea, white; Jackmanni, purple; Lady Bovill, puce; and Miss Bateman, white; Sieboldii, white; Lord Londesborough, violet; and the small-flowered kinds, Flammula and Cærulea odorata.]

Aretia Vitaliana.—This is a very beautiful but a most capricious plant. After many attempts at its cultivation with uncertain results, I have at last grown it satisfactorily in the open air, on a border composed of broken stones intermixed with a compost of sharp sand and loam, with a little peat. It grows freely when once established, and has a tendency to straggle and get "leggy," which soon results in the ends of the growing shoots dying off. I find the great secret of success is to keep the plant constantly "soiled up" with a little sharp sand, into which the young shoots freely root and form a round hard cushion. A plant I brought from Dauphiné in 1870 is now 8 or 10 inches in diameter, and is showing numbers of little yellow flower-buds. I have also flowered the plant freely in a cold frame, but it turned brown and died soon afterwards.—G. Maw, *Benthall Hall.*

Transportation of Heaths.—In the ice-house with the salmon ova from England, arriving at Hobart Town in May 1866, two bundles of Heather and a few shrubs were sent, as an experiment, to try this plan of sending trees. Upon the arrival of the Lincolnshire these were sent over to Mr. Mitchell, of the Experimental Farm, who reported upon them as follows:—"The six Apple trees, and also the two species of Heath (vulgaris and ciliaris), three plants of each, sent out on the surface of the ice-bin along with the salmon ova, arrived here in the most perfect condition possible. Indeed there is not even a decayed leaflet on the Heaths, and the whole of the plants are in as perfect health as if they had only been lifted out of the nursery on the day they were handed over to me."

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Primula nivalis and P. helvetica alba.—Mr. Ellacombe wishes to state, with reference to a note recently published in The Garden, that these two plants are quite distinct. P. helvetica alba is the white form of P. viscosa, so common in the mountains and high valleys of Switzerland.

Large-flowered Single Larkspur.—Allow me to inform your "Nameless" correspondent (see p. 297), that I have for years possessed this plant, and that I consider it to be one of the best plants I have. It grows double the height of its variety, the double Siberian Larkspur, and is of a most intense ultramarine blue, with a rich metallic lustre. The name "grandiflora" conveys an erroneous idea of the size of the flower, which is only of medium size.—Thos. Williams, *Bath Lodge, Ormskirk.*

Dormant Rose Buds Injured by Frost.—Briars budded last year commenced growing in January and February, and many of the buds which had started into premature growth, owing to the then unseasonable weather, have been killed by the severe frosts which prevailed on the nights of the 22nd, 23rd, and 24th of February, varying from 19°, 27°, and 30° below freezing. In Yorkshire at the time I am writing (12 a.m., 24th April), snow is falling heavily, which has continued at intervals from 7 a.m. this morning, and the thermometer stands at 30°. Wind N.E., and very cold.—H. Taylor, *Fencote, near Bedale.*

The Creeping Fig hardy.—This is grown in a small cool house in Mr. Ellacombe's garden, at Bitton, and through an opening in the roof a long shoot has passed up the wall of the dwelling house. It has not suffered in the least from cold. I have seen the plant thriving perfectly on an open garden wall in Colonel Tighe's garden, at Woodstock, Kilkenny. Many will, therefore, find a new use for it for outdoor Ferneries, rock-gardens, walls, &c.—R.

THE INDOOR GARDEN.

CLIANTHUS MAGNIFICUS.

This variety of the Glory Pea is, as its specific name implies, a truly magnificent and really charming plant, resembling its well-known congener, Clianthus puniceus. It appears to have been introduced into this country about the year 1830. Its flowers are large, and of a deep, rich scarlet colour, but without the dark, or rather black, boss which renders the blooms of Clianthus Dampieri so attractive; but, in all other respects, Clianthus magnificus is greatly superior to that species, as well as to Clianthus puniceus. The flowers are produced in immense pendulous bunches, and continue long in perfection; and, even when not in flower, the bright, shining foliage of the plant is exceedingly ornamental, and it does not, like the two other species named, become an easy prey to red spider or insect pests of any kind. It is nearly, if not quite, hardy, of rapid growth and easy cultivation, requiring abundance of root-room, and by no means particular as to soil. It will, indeed, luxuriate in any moderately rich compost, such as may be successfully used for the cultivation of the Pelargonium or the Fuchsia. For the purpose of clothing the back wall of a lean-to greenhouse, or for training to pillars, &c., in the conservatory, there are few plants that equal or surpass this fine Clianthus. A plant of it covers a large portion of the back wall of a greenhouse here, and is at the present time (April 10), and has been for the last three weeks, densely covered with hundreds of bunches of its large, rich, and singular-looking flowers.

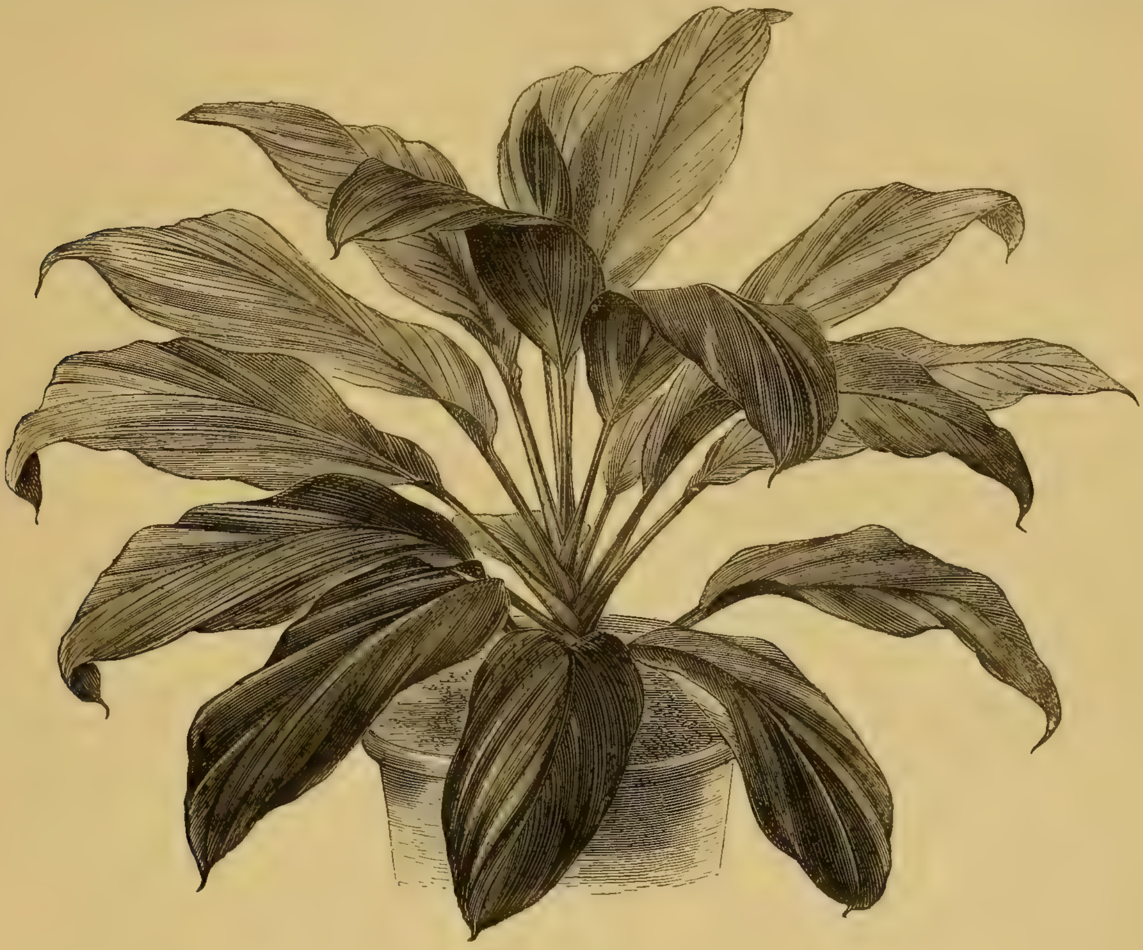
Culford, Bury St. Edmunds. P. G.

CONSERVATORY CLIMBERS.

Well-kept conservatories are often spoiled by unhealthy, shabby-looking climbers; whereas, when the climbers are healthy and well-flowered, they add so much to the good effect of a house, that they often redeem many shortcomings in the way of general furnishings. Climbers in an unhealthy, starved state, besides being unsightly, belie their true character, and they are, moreover, peculiarly the prey of insect life, especially of red spider and thrips. This unsatisfactory condition is generally the rule where climbers occupy pots or boxes, or are otherwise confined as to root space. To obviate this, in the case of such as are in narrow borders, I would recommend planting them in the open air, and introducing them through the front wall, the same as is done with Vines, allowing the more tender ones the south side, and the hardier sorts the other aspects. Many climbers, which are usually supposed to be too tender to stand out of doors, will be found to do well under this kind of treatment. The roots, though outside, need not necessarily be exposed to frost, but even of that not a few will stand several degrees. Care must, however, be taken to have them planted in a thoroughly well-drained position, and if the subsoil is not naturally gravel, a site must be prepared for them, in which a bottom is made of brickbats, lime rubbish, or some open material, and the roots must be protected in winter in the same way as those of early Vines. Tecoma jasminoides has grown here against a west wall for two years, and this last winter without any protection, while in the previous winter a mat only was used. Rhynchospermum jasminoides we have proved to stand 5° or 6° of frost, also Mandevilla suaveolens; but there is no necessity for exposing the top of any conservatory climber to frost, and the roots can also be easily protected. When planted outside, care must be taken not to have the necks of the plants exposed before entering the house; but where the walls are set on arches, planting inside, and, if the border is narrow, allowing the roots to run through to the outside, is best. We have, however, some here planted without any inside border at all, there being simply a hole in the wall, through which the stem of the climber is introduced. Thus managed, even Tacsonia Van Volxemii, almost the grandest of all conservatory climbers, and a native of New Granada, succeeds perfectly. It flowers profusely all through the winter, and produces seed-pods as large as Gherkin Cucumbers, hanging by a thread. Tecoma jasminoides, which, under ordinary circumstances, has a tendency to grow to wood, treated in this way becomes almost perpetual flowering, its showy umbels of Petunia-like flowers being much admired. Mandevilla suaveolens, too, the finest white-flowered conservatory climber with which I am acquainted, and which has a perfume almost equal to that of Stephanotis, flowered here up to November, and became almost deciduous, when it was pruned like a Vine, and now, in the middle of April, it is showing bloom again, and will soon be a sheet of white, trumpet-shaped flowers. The Glory Pea of New Zealand, Clianthus magnificus, and also C. puniceus, are well known to be both very accommodating plants, but liable to spider when grown indoors. These, treated as described, are, however, free from that pest. C. Dampieri may be inarched or grafted on the C. puniceus, a plan by which that ticklish creeper may be grown to perfection. I need scarcely mention such plants as Passiflora cœrulea and its varieties; Tacsonia manicata, or ignea, and mollissima; the Bignonias capreolata, radicans, and grandiflora; but of the brilliant Bignonia venusta I hope to be able to give a good account, planted out in this way. We also have Passiflora Buchananii planted in the way I have described; also Lapageria rosea, and various others, as well as plants not exactly climbers, such as Luculia gratissima. It will thus be seen that this is but carrying out, under particular circumstances, the modern idea of sub-tropical gardening, which has yet to be still further developed in many other useful ways.

W. Dick.

Canford.



Dracæna Dennisonii.

DRACÆNA DENNISONII.

This is another of the many fine species of this genus recently introduced from the South Sea Islands. It is a dwarf, robust growing kind, thickly furnished with leaves, which are about 15 inches long and 4 or 5 inches in breadth, their colour being a very dark brown. Its beauty, both as regards colour and habit, renders this species a grand object for window decoration during the warmer months of the year, and also for the ornamentation of halls, corridors, and porticos. Associated amongst other plants in a stove, too, it has a pleasing appearance, especially when elevated on an inverted pot, so that its head may be above the surrounding vegetation. This, like most of the coloured-leaved kinds, thrives best in a stove temperature, and on account of its comparatively dwarf habit it must not be overpotted. For our illustration of it we are indebted to Messrs. Veitch.

A.

SPRING FLOWERING CLEMATISES.

These are less robust in growth and less hardy in constitution than the summer-blooming race, and, blooming as they do quite early, require house protection either in a cool greenhouse or conservatory. Unlike the summer-blooming Clematises, which produce their flowers on the wood of the current year's growth, the spring-blooming race produce theirs on the ripened wood of the previous year, and therefore in pruning them during the winter only the decaying wood should be cut away. The plants should be grown in pots or tubs, or planted out in the borders of a conservatory, but so placed that they can have space to spread out their ample growth. They can be grown in pots in a small conservatory, and trained to stakes in the form of pillars, or round wire trellises of globular shape. Pots from ten to twelve inches in diameter will be found quite large enough for the first and second year's growth, but afterwards a larger size will be required. All the Clematises require rich soil, such as a good free loam mingled with leaf soil and decomposed manure, and the soil should be at least 3 inches below the rim of the pots, so as to admit of the plants being mulched with manure during the time of flowering, and a little weak manure water may be given at times with advantage. The plants should be placed in their blooming pots the previous spring, or not later than September the previous autumn; but there is a certain risk in potting late, as it frequently destroys the chance of flowers. It is therefore best to have the plants placed in their pots a year before the time of blooming. Treated in the way just suggested, many of these beautiful Clematises can be had in flower in March and April, and almost up to the time when the summer-blooming races display their flowers. Let it be distinctly understood that it is quite in the power of those having only a small conservatory attached to a suburban residence to to grow a few of these Clematises in pots as suggested.

Mr. Noble, of Sunningdale, has produced some beautiful hybrids belonging to this class. They comprise Albert Victor, deep lavender, with brown ribs along the centre of each petal; Harry Richmond, lavender-grey, each petal having a flame of deep violet; Lord Londesborough, rich mauve, the petals having the centre stripe of maroon; Lady Londesborough, silver-grey, with flame of white; Mrs. Villiers Lister, cream tinted with pink, and bars of maroon; Mrs. Howard Vyse, white, each petal edged with mauve; Miss Bateman, pure white, very fine stout flowers; Princess Mary, pink, suffused with puce, each petal having a pale stripe; and Queen Guinevère, creamy white. Mr. Noble has other varieties, but the foregoing have been repeatedly shown, and therefore a definite opinion can be formed as to their merits. Other good varieties of the spring-flowering kinds are Azurea grandiflora (C. patens), delicate mauve lilac, with pale centre; Sophia, deep lilac purple; Standishii, light mauve; and Victor Lemoine, blue tinged with violet. There is also a class of double-flowering kinds which find favour with many; they consist of Sophia plena, lilac purple; Florida plena, creamy white; Fortunei, creamy white, large rosette-like flowers; and John Gould Veitch, lavender-blue, full double flowers. The old C. Sieboldii, with its freely-produced creamy white flowers, is also well worth cultivation. R. D.

THE FRUIT GARDEN.

PEAR CULTURE.

BY JOHN SCOTT.

(*Concluded from page* 319.)

WHILE recommending root-pruning, it is necessary that I should say a few words to pervent its being over-done. 1st. When a tree has attained the height of 6 to 7 feet, and is in a free growing and healthy condition, making a considerable quantity of wood every year, and not much fruit, it is then time to check its over luxuriance by root-pruning. Now, this first cutting of the roots is a most important operation for the tree's welfare afterwards, and requires to be done with caution, that is, never cut any tree more than half-way round the first time; take out a trench half round, making the stem the centre of a circle, with a radius of 15 inches; mark the half circle, then take a good sharp spade and remove the earth, about 15 inches wide, outside your half circle, to the depth of 18 to 24 inches, cutting all the horizontal roots you find, and then pass the spade well in under the tap roots, for they are the cause of unfruitfulness; and it is of primary importance that they be well cut through. Having done this fill in the hole with some good half rotted manure, mixing it well with the earth as you fill up, keeping the best of it nearest to the surface. If this first cutting throws the tree into bearing, you will not require to repeat the operation on the other half until the tree again shows symptoms of over luxuriance and an inclination not to produce its fruit; then is the time to serve the other half circle just as you served the first. Let your tree then rest until it again gets too luxuriant, which may either be in two, three, to six years. I need only say that root-pruning should cease whenever the object for which it has been used is attained; there is no use in root-pruning a fertile tree: besides, overdoing the thing causes your trees to produce dry, sticky and gritty fruit, therefore be judicious in the use you make of root-pruning. In most cases no tree requires more than two or three root-prunings, and these only at intervals, according to circumstances, as I have just shown. My specimen pyramid Pears are planted at 6 feet apart; they are seventeen years old, and are now pictures of fruitfulness, being covered from the top to the lowest branch with well developed fruit buds; and from having been regularly and well root-pruned, they hardly require a knife to be put upon them.

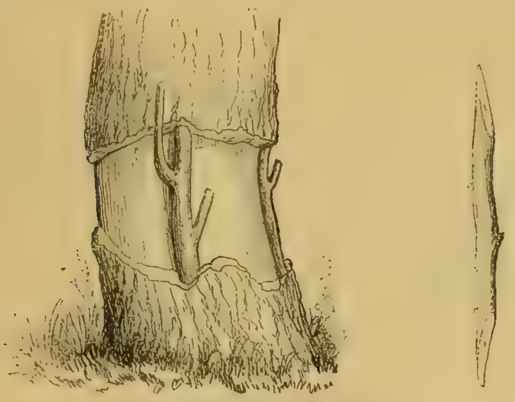
I have now given directions for raising pyramids from the commencement, but nothing is gained by so doing; time is lost, and no money is saved, as the maiden trees will probably cost from 1s. to 1s. 6d. each, and a finely-formed root-pruned tree may be purchased from my nursery, from 5 to 6 feet high, at from 2s. 6d. to 3s. 6d.; a tree that would, if the season was favourable, produce half a peck of good fruit the second year. To those who have wet, heavy, or cold soils, I would say, plant Pears upon the Quince stock; to those with light or too warm soils I would say, be careful what Pears you plant: the sorts that do upon such soils are few, and care should be used in selecting those kinds that will do well, such as Beurré Hardy and Williams' d'Hiver, which will grow on the Quince in almost any soil. Trees grown on Quince stocks require little or no root-pruning; yet to be lifted occasionally, with all their roots intact, keep them in a fruitful and healthy state. Trees on this stock are improved by periodical lifting, and by covering their roots well in winter with half decayed stable manure. If attention be paid to plant the trees deep enough, so as to cover the junction of the graft, and to annual or biennial mulching, it is amazing what fine fruit will be obtained. The Quince roots do not run very deep, and, therefore, should have food at the surface. A piece of ground, say 36 feet square, would hold 36 trees, upon the Quince stock, set six feet apart each way. These could easily be manured annually, and would amply repay the care bestowed upon them; they would require but little pruning, and if a close hedge of Arbor vitæ were put around them it would protect them from storms, and in spring it would be very inexpensive to cover them all over with a thin bunting and thus insure an annual crop. This is what I call an orchard house for the million, and it can be carried out either on a small or large scale, according to the fancy of the planter. In strong moist clayey soils, the trees will require to be lifted oftener than on light or loamy soils. Bushes on this stock require only to be kept lower, by not allowing the leading shoot to grow, but distributing the branches so that they may form regular bushy heads, which must be kept regulated and thin, to admit air to all parts of the tree.

The cordon system is another useful way of training and growing Pears: this can only be practised where some kind of support is given to the trees, such as a wall, paling, stakes, or wires. The trees may be planted from 1 to 2 feet apart, if against a wall or paling, and trained to a single shoot; this is to be attached to the wall, either horizontally, obliquely, or vertically, and trained in full length; the side shoots will require to be pinched back once in summer to about 3 inches long, and early in winter cut back to one or two eyes; these, in many instances, will have become fruit buds in autumn, unless the tree has got its roots without bounds, which must be prevented by a free use of the spade, to stop them from penetrating too deep into the earth—a thing that causes more unfruitfulness, and more falling off and shanking of fruit, than all the diseases to which trees are subject. Do not over-pinch the shoots of your trees, as disease will be sure to follow, but rather cut away all straggling roots, and especially such as take a perpendicular direction. This root-pruning is a thousand times to be preferred to having a faggot or two cut from your trees every year. Do not be afraid to use a good sharp spade to cut your roots: a knife is useless; a man with a spade will effectually root-prune a tree in ten minutes, which, if left to grow unchecked, and to send its roots deep into the cold soil below, would take the same man an hour or two to properly prune it, and every year would increase the useless labour of cutting and hacking the branches; added to which, you would be looking for fruit, and your tree would only produce you the usual annual amount of faggot wood. But let a clean sharp spade stop the liquid flow from below, and then look out for fertility, and keep your knife shut in your pocket—at least nearly so, *i.e.*, only use it to thin, stop, or regulate the branches, now become ropes of fruit spurs. The Gilogilles is, perhaps, the strongest growing of Pears: I had some splendid trees of it, annually making shoots from 6 to 8 feet long, and some of them one inch in diameter; but they produced no fruit—the knife only made things worse, but a few strokes of the spade soon altered their appearance. Early in August I cut the fangs that drew the supplies too abundantly from below; the following spring the tree was a sheet of bloom, and did not make a shoot 6 inches long for the next four years, but, instead, produced

quantities of large, round, russety fruits, some of them from half to three-quarters of a pound each. The same treatment holds good with all over-luxuriant trees: cut the branches only, and you will have annually to repeat the operation; cut the roots, and you will gather fruit instead of faggots. Hardly any tree is too old to be operated upon. By doing this the quantity, flavour, and quality of the fruit will be improved. But be careful, as I have said above, not to overdo the matter.
Merriott, Crewkerne.

CURE FOR BARKED FRUIT TREES.

Since the winter of 1867 and 1868, there has been none more favourable for field mice than the one just ended. Over a wide range of country the ground was covered with a heavy body of snow in December. This was added to by frequent storms, and it remained during the entire season. In closely-planted orchards the snow was piled in places several feet in thickness for eight or nine weeks, and afforded just the conditions most propitious for these active little pests. Trees from which the bark has been gnawed all around, and from 6 to 12 inches in width, are sure to die within a year unless prompt measures are taken to restore connection between the bark above and below the wound. The prescriptions for effecting this, which have been published from time to time, are as numerous as flies in midsummer, and most of them as unsatisfactory. Where only a third or a half of the circle has been made, leaving a connecting strip, then by covering the bare part with a coating of cow-droppings and yellow clay, the young bark will grow over the wound much sooner than if left exposed. Where there is no such connection, however, the best and most simple method of forming one—and the method that never fails—is to insert scions (one, two, or three, as the case may require), bridging over the barked part, as in the accompanying illustration, which is an exact drawing of a Pear tree that four years ago was barked, and (with many others similarly treated) is now in fine condition. The method is simple and rapid, and any one can effect the operation without difficulty. Take the scions of last year's growth of wood, from young healthy trees, cut them the right length, bevel each on the same side at both ends. Then, with a budding-knife, make an incision in the bark of the tree above and below the injured part, and carefully press the scion into position. Cover over where the incision was made with grafting-wax, aad then wind around the stem of the tree, at both ends of the scions, some narrow strips of bast matting, which will keep them firmly in their place. For trees from which the bark has only been gnawed half or two-thirds the way round, one or two scions will be sufficient; but when there is no connection left, it will be found advisable, particularly on a large-sized tree, to put in three scions. The work may be done at any time between the 1st and 10th of April.—*New York Tribune.*



Mode of curing Barked Trunks.

STRAWBERRIES OUT-OF-DOORS.

In nineteen out of every twenty of the gardens of England Strawberries are not grown out-of-doors to the best advantage. In the first place, the ground is not well prepared previously to planting; in the second, the runners are not selected sufficiently early to obtain a crop of fruit the following season; and, lastly, the plants are allowed to remain on the same ground year after year, until only the merest apology for a crop is obtained from them. Under good cultivation, the Strawberry will succeed in almost any description of soil, although a deep loam of a clayey nature suits it best. To very light soils, it is advantageous to add clayey loam if it can be readily obtained. The ground intended for the reception of the plants should be prepared by being trenched at least 20 inches deep, applying at the same time a good dressing of farm-yard manure. As Strawberries are frequently planted, a season is lost before a crop can be gathered; this ought not to be. A crop of Peas, Potatoes, Cabbages, or anything that can be taken from the ground before the second week in July, may be grown, and as soon as they are cleared off, the space intended for the Strawberries should be trenched, as the plants will succeed all the better if the ground has been prepared a few weeks previously. The runners must be prepared for planting as soon as they can be obtained, and in most seasons this will be about the first week in July. They should be layered in small pots, in a compost consisting of three parts loam to one of well-rotted manure, and each runner should be kept in its place by means of a small peg; some place a small stone on the tendril to keep the runner in position, but this does not hold it so securely as a peg does. In about a fortnight the most forward runners will be ready to be removed from the parent plants, when they may be cut away and placed in some open space until the later ones are ready, which will be in about a week or ten days. The ground by this time should be ready for their reception, as the sooner they are planted the more abundant will be the crop the following season. The rows should be 2 feet apart, and the same distance should be allowed between the plants. The operation of planting should be performed in a careful manner, and a shallow depression ought to be left around each plant, in order that they may be watered effectually should continued dry weather set in. Strawberries, especially on light soils, are liable to be attacked by red spider about planting time; and should the young plants be infested with this pest, it will be necessary to dip their leaves in a pail of water, in which a quarter of a pound of tobacco has been steeped, and in which the same quantity of soft soap has been dissolved; as, unless red-spider can be dislodged from the leaves, the plants will not grow freely. After the plants are put in the ground they will require no other attention that season except running the hoe between the rows to destroy incipient weeds. By these means a good crop of fruit may be secured the season after planting, and I may add that after many years' experience I have found it to be most advantageous to destroy the plants as soon as the fruit is gathered and sufficient runners can be obtained to plant a fresh bed for the following year's crops. I have repeatedly left the plants to bear a second crop and have compared them with those which were planted the previous year, and the result has been that, both in wet and dry seasons, the largest crops and best fruit have been invariably obtained from the young plants. This system of cultivation is also, I believe, the most profitable, inasmuch as no time is lost as regards cropping; for the ground, it will be remembered, was just cleared of an important crop of vegetables previously to its being trenched and well manured for the Strawberries. As soon as the old Strawberry plants are cleared off, which can be done readily by cutting them just underneath the surface with a spade, they may either be wheeled out to the vegetable heap, or burned on the ground; the space should be hoed over deeply with a draw hoe, and may be planted at once with white Broccoli, no other preparation being required. The same system of cultivation may be pursued year after year with the most satisfactory results.

As to varieties, the earliest to ripen is Black Prince, which is an abundant bearer, and when cultivated on the annual system its fruit is of fair average size, while that from old beds is not larger than good sized Marrowfat Peas. Keens' Seedling still maintains its character as being an excellent second early dessert Strawberry, and it makes an excellent preserve, of a rich dark colour. President is a grand sort for dessert, and seldom fails to bear a good crop. Premier is a very large-fruited kind, of a rich dark colour, and bears abundantly; though a desirable sort, it is only second-rate as regards flavour. Sir Charles Napier is an excellent variety for preserving. Its fruit is very large, of a bright red colour, and of a sub-acid flavour, which is liked by some. British Queen, a fine old sort, of large size, is still the richest flavoured of all Strawberries. Frogmore Late Pine is undoubtedly the best of the late Pine-flavoured sorts. Its fruit is of large size, cone-shaped, and borne in profusion. Besides these, there are many more excellent varieties, but the kinds just named are sufficient even for very large establishments. J. D.

THE CASTLE KENNEDY FIG.

EVERYONE who has seen and tasted this Fig in its true character will acknowledge its merits as regard size, appearance, and flavour. As regards size it is, I believe, the largest Fig grown; it has the reputation, however, of being a shy bearer, which is no doubt the case under certain treatment. It will not force for two or more crops, like the Brown Turkey, nor bear pinching well, though it is a very early Fig. The best samples of it I have seen have invariably been borne on the points of the last year's shoots; and I think Mr. Fowler has on several occasions exhibited samples of such shoots with numbers of fine fruit on them. I have tried it in various ways here, and find that the best and most profitable returns are secured by treating it for one crop only in the season. With this end in view, the pruning of the tree is a matter of some importance. I have heard of the Castle Kennedy Fig doing remarkably well in an orchard house where it was planted out in the border, judiciously root pruned, and allowed plenty of head room—perhaps the very best way of growing Figs of any variety, and especially those kinds that do not force well. The only pruning required under such circumstances would be the thinning out of the shoots occasionally where too crowded; the shoots which are retained to be allowed to grow as much as they liked, and on no account to be pinched. If root pruning is attended to, or what is better, if the roots of each tree are confined by brickwork to a given space, the wood will not be gross, but short-jointed and hard, with a crowd of embryo fruit on the point of each shoot by the end of autumn, all or nearly all of which will come to maturity the following summer, if the trees are not neglected as to watering. Figs can hardly have too much water when growing, when their rooting space is restricted. When the trees are trained against a wall, the same rules must be observed in the pruning, only taking care to cover the wall space from top to bottom with bearing wood. The fan system of training is as simple a plan as any, but the shoots must not be tied too closely to the wall or trellis; on the contrary, they should be left projecting a little, to allow some freedom to the large leaves. J. S. W.

Keeping Lady Downe's Grapes till Midsummer.—Mr. Tillery's note on bottling Grapes (see p. 273) reminds me of the Irish gentleman, who, when offered Asparagus rather late in the season, remarked that he "never ate Grass after the Pays were in." It is a creditable feat to keep late Grapes till the middle of June, as Mr. Tillery does, but I have never known any one who preferred such for dessert when they could get early Hamburghs or others; nor, for that part of it, early Strawberries. We begin gathering Strawberries daily by the end of March, after which I find the demand for our Lady Downe's Grapes abates very considerably; even now we have some good samples of that variety, which look as if they would keep for a long while, though they have been bottled since the end of February; but our early Grapes, which are being pushed on for the London season, will set them aside. As regards the cost of fuel in the production of early Grapes, it just amounts to this—West-end families will have Grapes during the season, and if they cannot have them grown at their own establishment, they will have to buy them, and pay both the producer and the seller at perhaps the rate of twenty-five shillings per pound; while, if they grow their own fruit, it will cost them less than a fifth of that price. In our early vinery here, 30 feet long and 16 feet wide, we have at present 200 bunches of fruit approaching maturity, and I am quite certain that £20 would cover the cost of fuel and the working expenses incurred in their production. The house is an item of one man's charge, and the mixed coke and slack which we burn costs about ten shillings per ton. —J. SIMPSON, *Wortley*.

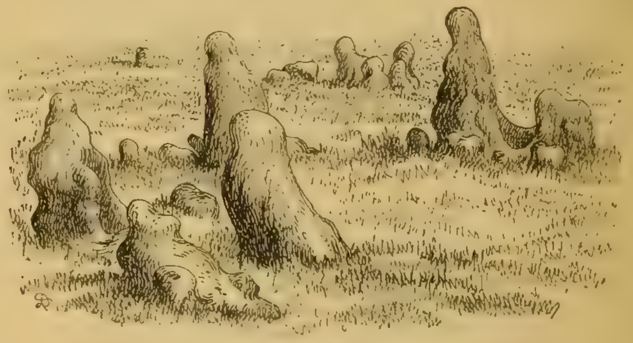
Gooseberry Trees.—I have noticed the Gooseberry trees in many of the gardens in this neighbourhood, and there appears to be a poor prospect as regards fruit. January was unusually warm, and the buds would soon have been into leaf had not a hard frost set in in February. On Sunday morning February 23rd, my thermometer registered 19° of frost; on February 24th, 27°; and again on the 25th the thermometer stood at 2°, making 30° of frost. Snow fell also on these days; the effect has been to kill the premature buds, and many of the branches are quite bare of both leaves and fruit.—H. TAYLOR, *Fencote, near Bedale.*

THE ARBORETUM.

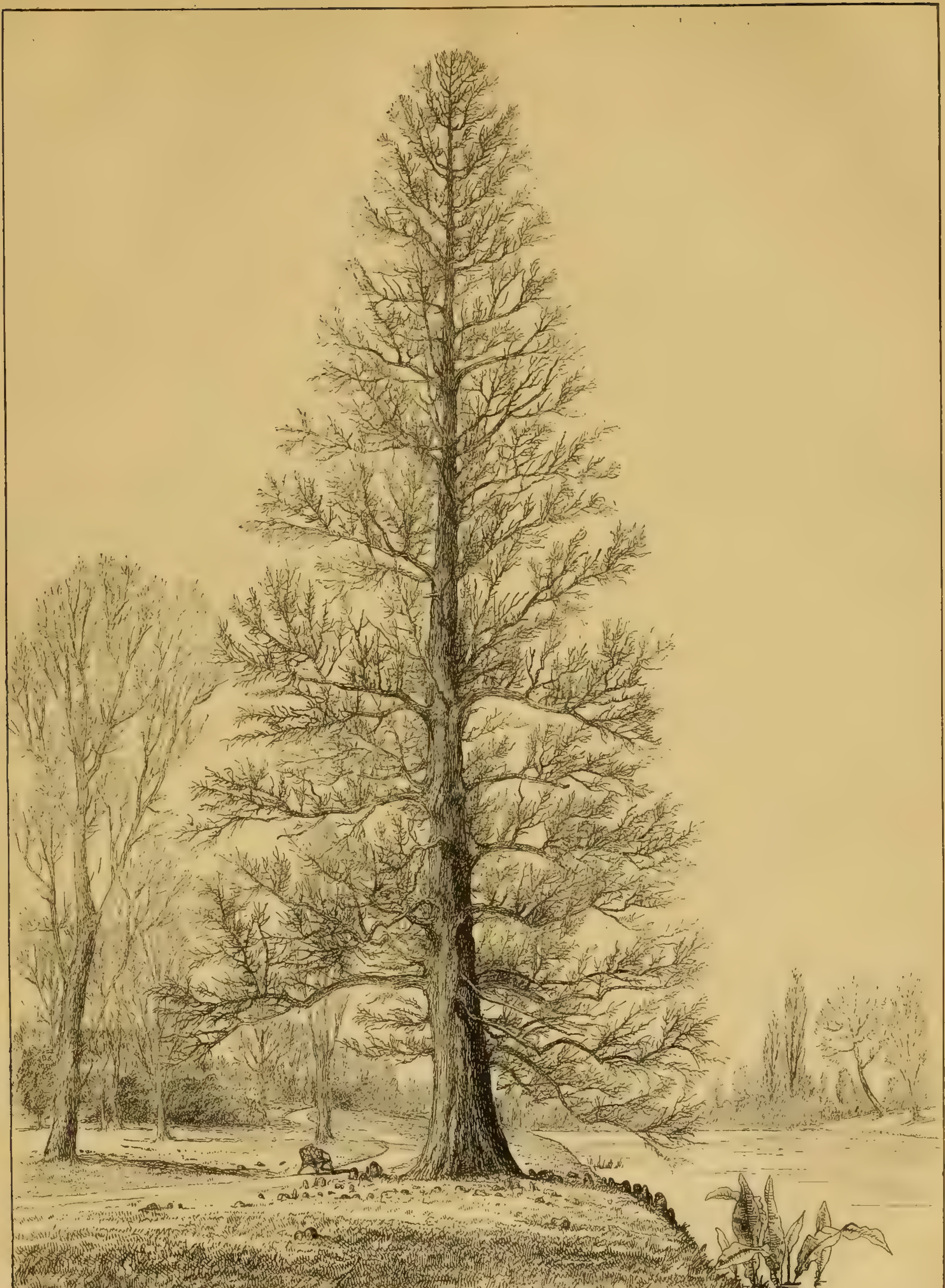
THE DECIDUOUS CYPRESS.

(TAXODIUM DISTICHUM.)

THE lofty trees which form the genus Taxodium are mostly found in the rich swampy soil of Florida, and other southern States of North America. In these swamps, on whose deep miry soil a new layer of vegetable mould is every year deposited, the deciduous Cypress attains its utmost development. In what is termed the "Dismal Swamp" in Norfolk, Virginia, immense numbers of these Cypresses flourish along with the white Cedars. Their largest trunks are 120 feet in height, and from 25 to 40 feet in circumference above the conical base, which, at the surface of the earth, is always three or four times as large as the continued diameter of the bole. In felling them, the negroes are obliged to raise themselves upon scaffolds five or six feet from the ground, as the base is usually hollow for three-quarters of its bulk. Its surface is longitudinally furrowed with deep channels, whose ridges serve as cramps to fix the tree more firmly in the loose soil. The roots of the largest specimens, particularly of such as are most exposed to inundation, are covered with conical protuberances, commonly from 18 inches to over 4 feet high, and sometimes 4 or 5 feet in thickness. They are always hollow, smooth on the surface, and covered with a reddish bark like the roots, which they resemble, also, in the softness of their wood. They exhibit no sign of vegetation, and M. Michaux states that he has never succeeded in obtaining shoots by wounding their surface and covering them with earth. No cause can be assigned for their existence; they are peculiar to this Cypress, and begin to appear when it is 20 or 25 feet in height; they are not made use of except by the negroes for bee-hives. In the park of Fontainebleau a number of these Cypresses are planted along the margin of a stream. These have produced such an abundance of protuberances as to form a sort of natural wall along the river bank, and for a distance of 30 or 40 feet into the meadow they are so numerous that it is impossible to mow the Grass with a scythe. The summit of this Cypress is not usually pyramidal, like the Spruces; but widely spread, and even upon old trees depressed. The foliage is open, light, and of a fresh agreeable tint; each leaf is 4 or 5 inches long, and consists of two parallel rows of leaflets upon a common stem. The leaflets are small, fine, and somewhat arching, with the convex side outwards. In the autumn they change from a light green to a dull red, and are shed soon afterwards. The deciduous Cypress has occasionally produced cones in this country, but such an occurrence is not very common. One of the largest specimens of this tree in England is to be seen in the grounds at Syon House, of which the annexed is an illustration, drawn and engraved for THE GARDEN. It measures 84 feet in height, 14 feet in circumference at 3 feet from the ground, and the diameter of the branches is 43 feet. Around the base may be seen the protuberances or "knees," as they are sometimes termed, appearing above the surface of the ground. In our smaller illustration, above, we have figured some of these "knees" separately, in order to give some idea of the aspect which they present individually, on a closer inspection.



"Knees" of the Deciduous Cypress at Syon.



DECIDUOUS CYPRESS IN THE PLEASURE GROUNDS AT SYON.—(Sketched April 1873.)

PYRUS (CYDONIA) JAPONICA.

Plants of this Pyrus rank amongst the most beautiful of all our early flowering shrubs. I have seen them glow with a beauty on the walls of dwelling-houses such as the most brilliant Rose could hardly match. The flower-cups seemed full of glorious light as one looked into them, fully expanded and exposed above their scant foliage, that hugged the wall as closely as if it feared to hide a single bloom. Here and there throughout the country one stumbles upon a glorious plant of this Pyrus that sets one a-craving. Henceforth one or more are ordered. They come so stiff and stunted that they either die or make no progress for years, and hence, I believe, to a great extent, the reason that this grand old plant is not more generally cultivated. It is not popular. The demand does not create a supply, and when a few are wanted, old ground keepers are sent out that refuse to grow. This is unfortunate, for this is, indeed, a noble plant, and also a free-growing one in some localities. But it seems to suffer somewhat from weakness of constitution. Most plants have one or more stunted branches, on which the leaves have a good many shades—too many—of yellow in them, and these yellow-leaved branches are only too apt to die altogether. The plant is generally propagated by means of layers, and grown on its own roots. I think a fortune might be made out of grafted plants worked on other and freer-growing kinds of Pyrus or Cratægus. This Pyrus is mostly grown as a wall plant; but it forms a nice plant for the back or front of a warm shrubbery, or the back of a herbaceous border; and would look extremely rich and dressy as a standard, or on stocks that would feed and stimulate it into free growth. In this way it might prove a valuable plant for forcing, as I have seen it frequently in flower in the open ground in the beginning of April, and occasionally, on a south wall, in March. The branchlets of bloom would be admirable additions for the dressing of vases, and the single flowers would look well in bouquets surmounting white or Primrose flowers. There are several varieties of this fine old plant—the common Japonica or scarlet, carnea or a flesh-coloured kind, the pure white, and a semi-double red. The great points are healthy plants to start with, and a free growth, which, I think, would be assisted by free stocks. As it is, the plants are mostly all flower, and, in a majority of cases, more or less unhealthy. D. T. Fish.

The Shakspeare Oak.—On the tercentenary of Shakspeare's birthday, nine years ago, Mr. Phelps, the tragedian, planted an Oak, from the Royal forest of Windsor, on the side of Primrose-hill next the Regent's Park. The young tree has flourished, in spite of a want of proper protection; and it is now thought that, to prevent further reproach, an ornamental iron palisade should be erected round the Oak, and that a characteristic tablet should also adorn the spot. Mr. G. Victor Morgan, F.S.A., of New Broad-street, is the honorary treasurer of a fund which has been started for this purpose; and the co-operation of actors, authors, artists, and the general public is invited to raise, by small subscriptions, a sum of about £200.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Tulip Tree.—The largest specimen of this perhaps in England is at Corney, close to the Duke of Devonshire's at Chiswick.—A.

The Douglas Oak.—The Quercus Douglasii, of which mention was made last week, forms a large deciduous tree in California, with downy and sinuately lobed leaves from 3 to 4 inches in length. It was sent home by Hartwig in 1847, and is quite hardy in this country.—G. G.

Planting Hollies.—Will you kindly tell me in your next impression what you consider the best time for transplanting Holly trees? Those I have to transplant are of many years' growth, the stem near the bottom being about 12 or 13 inches in circumference.—H. A. [The best time for transplanting Hollies is in showery weather in May.]

Zones of Coniferæ from the Mediterranean to the Crest of the Maritime Alps.—The following table shows the lowest and highest elevations in feet at which the different species are found:—

	Lwst.	Hghst.		Lwst.	Hghst.
Pinus Pinea	0	1046	Abies excelsa	1800	3100
P. maritima	0	4143	A. pectinata...	1900	3600
P. halepensis	0	2760	Taxus baccata	2650	2650
Cupressus sempervirens ..	0	2300	Larix europæa	3500	5500
Juniperus phœnicea ...	0	4000	Pinus Cembra	4500	5150
Pinus sylvestris	1977	5100	Juniperus communis ...	0	6300

The starting points from the coast embraced the line from Monaco to Ventimiglia.—M. Moggridge.

Prunus obovalifolia.—A seedling of Prunus spinosa, raised by M. Carrière, and differing from the parent in being entirely devoid of thorns, and having broadly oboval leaves and larger flowers. The tree is very vigorous, with a remarkably straight stem and spreading branches, covered with a red and very shining bark. It first bore fruit in 1872, seven years from the time of sowing. M. Carrière is of opinion that our garden varieties of the Plum must have sprung from a stock similar to this, although the received notion is that our thornless Plum trees are merely one of the results of cultivation.

THE LIBRARY.

A LITERAL TRANSLATION OF THE ECLOGUES AND GEORGICS OF VIRGIL.*

This is a fairly good translation, based, as the author states in his preface, on the annotations of the late Professor Conington, whom he nevertheless, somewhat inconsistently as it appears to us, labours hard to depreciate. The entire preface is, in fact, one long attack on the Professor's renderings of numerous passages, as being either deficient in accuracy or wanting in felicity of expression. We do not ourselves agree with Mr. Wilkins in many of his observations, and we do not think his translation gains anything from the severity of his remarks on the work of the late Professor, which he admits was left in a very unfinished state. There is no doubt that Mr. Wilkins has not unsuccessfully (to use his own words), "attempted in some degree to echo the Virgilian rhythm," as will appear from the subjoined extracts from the second and fourth books of the Georgics, in which the cultivation of the Vine and the management of bees are treated of; and there is therefore the less reason why he should have thought it necessary to add to his reputation by a self-instituted and, we must say, invidious comparison of his own version with that of Professor Conington.

VIRGIL'S DESCRIPTION OF SPRING.

Let no counsellor have such credit for foresight as to induce you to stir the stiffened soil while Boreas breathes; winter then seals the land with frost; and when the plant is set, forbids it to strike home to earth its frozen root. The best season for planting Vineyards is when, amid the blush of vernal flowers, the white bird, the trailing serpent's deadly foe, has come, or on the verge of autumn's earliest chills, ere the sultry sun has reached the realm of winter with his steeds, and when summer is just passing away. Spring ministers to the foliage of the groves, spring to the woods: in springtime earth swells with fruitfulness, and asks the seed that giveth life. 'Tis then that the almighty father Air descends in fertilising showers into the lap of his joyous spouse, and in his might, mingling with her mighty frame, nourishes all the embryos within. Then pathless brakes with tuneful birds resound, and herds on certain days renew their loves; bounteous earth teems with life, and the fields open their bosoms to the zephyr's balmy breezes; a delicate moisture abounds everywhere; the herbage safely dares to trust itself to meet the new-born suns; nor does the Vine-leaf dread the rising of the southern gales, or the shower driven from the sky by the north's impetuous blast, but puts forth its buds and all its leaves unfolds. Such days as these, I would fain believe, shone at the primal hour of the infant world, and held the tenor of their birth; that was the reign of spring; it was springtime that the vast globe was enjoying, and the east winds forbore their wintry blasts, what time the first cattle drank the light, and man's race reared its head—a race of iron from a land of stone—and wild beasts were sent to range among the woods, stars amid the sky. Nor could tender nature long endure her trials here, did not a prolonged repose intervene between wintry chills and summer heat, and heaven's more genial mood relieve the earth.

A POOR MAN'S GARDEN IN VIRGIL'S TIME.

For I well remember seeing, beneath Œbalia's lofty towers, where dark Galæsus bathes the golden meads, an old man from Corycus, the owner of a few acres of unapportioned land, of a soil of no fertility for ploughing, unpropitious for grazing, ungenial to the wine-god's juice. Yet he, while planting pot-herbs here and there on thorny ground, with a border of white Lilies, Vervain, too, and tiny Poppy seeds, matched in the pride of his heart the wealth of kings, and returning home in the late evening hours would load his table with a feast unbought. He was the first to pluck the Roses of spring, the fruits of autumn, and while sullen winter was still splitting the very rocks with his frost, and bridling the flow of waters with his icy curb, he was just gathering the delicate Hyacinth's flower, chiding summer's slow approach and the zephyr's long delay.

The postal authorities urgently recommend the use of strong envelopes, which, in case of bulky or heavy letters, should be made of linen. This caution has become the more necessary since, owing to the late reduction in the rate of postage, many more bulky and heavy letters and packets are sent through the post than formerly.

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* A Literal Translation of the Eclogues and Georgics of Virgil, by H. Musgrave Wilkins, M.A. London; Longmans, Green, and Co. 1873.

THE KITCHEN GARDEN.

ASPARAGUS.

(ASPARAGUS OFFICINALIS.)

This plant belongs to the Lily family, and is a member of a large genus of plants, mostly natives of Africa, distinguished by fine small leaves, which make some of the kinds very graceful and elegant. The common kind is a native of sandy shores all round the basin of the Mediterranean, and along those of western Europe, till it reaches the western and south-western shores of England. It also grows on sandy plains in South Europe and North Africa. The flowers, which are small, are greenish-white, borne in twos or threes, and are succeeded by small, round, red berries, and the plant has a very elegant and feathery habit.

SOIL, MANURE, ETC.

Soils, subsoils, and situations differ, and so must practice also. The soil all round our sea-coast, if rich and within a taste of the briny, is eminently suitable for Asparagus; and once properly planted, it might go on for half a century without any more assistance than it gets from the flooding of each spring tide. Change the scene. Place the beds in Sherwood Forest, with 10 to 20 feet of drift sand underneath them, and, without the liberal use of the manure cart, in seven years you would not have a piece of Asparagus as thick as a pipe-stem. For good and lasting beds of Asparagus, considerable depth of soil is requisite. The best soil is a rich friable loam; but good crops may be obtained from any good sandy or mellow loam. Should the texture of the soil be too close, it should be sufficiently lightened and made porous by the application of large quantities of manure; sand or sandy mud is, however, more beneficial than manure in its opening qualities for heavy soils. The situation for this vegetable should be open to the sun, yet sheltered from strong winds. As Asparagus is one of the most permanent and lasting of all garden crops, and well-made beds continue in a good bearing condition for twenty years or more, it is advisable to decide, before forming the plantation, whether or not any alterations are likely to be made that would in any way disturb the beds. The ground should be trenched to the depth of 3 feet, at the same time turning in a heavy dressing of manure and seaweed (should the latter be easily obtained, otherwise it would not be advisable to go to the expense of procuring it, as very good Asparagus can be obtained without it); and should the ground be deficient in depth or quality, some good sweet loam from an old pasture may most advantageously be employed. These ought to be thoroughly incorporated with the soil at the time of trenching, and so worked that it may have an enriching and ameliorating influence on every particle of soil in the beds. This trenching should be performed in the beginning of winter, and laid up in the common way of ridging, thus to remain till spring; when, towards the end of March or first week of April, according to the state of the weather and condition of the ground, the ridges may be levelled, choosing for the operation a fine dry day. Fork and tumble over with a strong fork or pickaxe the ridges at all times when frozen hard, in order to pulverize, sweeten, and incorporate all well together. The principle of success with this vegetable lies within a small compass. All seem to acknowledge that, in order to obtain a good crop, there must be a good depth of rich soil. About forty years ago a good piece of ground was chosen to make a permanent plantation of Asparagus. It was trenched 3 feet deep in 3 feet wide trenches, and cast up into rough ridges, after a crop of summer Peas. All decaying vegetation in the rubbish-yards and corners was at the same time well salted and turned up. Early in autumn, also, were added some old Mushroom, Melon, and Cucumber-bed material, a lot of manure from piggeries, cow-houses, and stables, a quantity of road-grit and sand, a quantity of ditch and drain parings, turfy loam and sods, quite 3 feet thick—were all turned over four times and well incorporated together, between Michaelmas and Lady Day, as one would a dung-heap, the whole being left in large ridges exposed to the frost. By April this compost was in a kindly state; it was, therefore, laid down and planted with good, clean, one-year-old Asparagus plants, which certainly grew in a most extraordinary way, and the second year produced wonderful shoots as to size; and the same plantation has continued to produce fine heads ever since. In order to give a fair idea of the quality of "grass" which this plantation is still producing, it may be mentioned that one hundred heads cut from it now average from 12 lbs. to 14 lbs. weight, the heads being 7 inches in length. Even after forty years' existence, this plantation is still improving, and it looks as if it would be as good sixty years hence as it is now.

Wherever ordinary farm-yard manure is not very abundant and labour plentiful, a good result may be obtained by collecting together all decomposing vegetable matter—old hotbeds, Mushroom beds, pig refuse, &c., with seaweed where convenient; and, when the position for the beds is determined upon, this should be spread upon the ground about a foot thick, and turned over with 2 or 3 feet of the earth two or three times in winter. This treatment will be attended with very excellent results.

The application of salt as a top dressing is of great benefit to Asparagus in inland districts, but is of little or no value in the vicinity of salt water. It should be applied in spring and very early summer by scattering some common coarse salt over the ground in showery weather. Old and well-established plantations are particularly benefited by this treatment; but in no case should it be applied to plants recently removed, for all such, however carefully transplanted, must have wounded roots, to which salt would prove very injurious; nor should it be applied at any time when the roots are in a dormant state. Besides its beneficial effects upon the plant as a manure, it is very destructive to the wireworm and other insects so injurious to the roots of the Asparagus. Salt may safely be applied at the rate of 2 lbs. per square yard. It is, however, better to give this quantity in two doses. I have always found salt most beneficial. It should not be applied in dry or sunny weather.

SEED SOWING.

Asparagus is propagated by seed, which may either be sown when ripe in October, or in spring; but the latter time is certainly the best. It may either be sown on the ground prepared for the plantation, or in drills one foot apart in beds of light, rich, sandy soil, and transplanted to a permanent position when one year old, which is by far the most desirable method. To get strong clean plants at one year old, and to save a year's strength, sow thin, and hoe out quickly after the plants are up, with a sharp one-hand 3-inch hoe, or otherwise thin the plants to 3 or 4 inches apart, taking care to select all the strongest plants to stand; thus, very strong clean plants may be produced in one year. By keeping the seed beds carefully hoed and free from weeds, the plants will be in fine condition for planting out the following spring; whereas, should they be neglected, it will take two years before they are as large as well-attended one-year-old plants. It is in consequence of this very common neglect that many cultivators labour under the impression that the plants must be two or three years old before planting; which is undoubtedly a mistake, for all good growers invariably plant one-year-old plants, and count on reaping a crop the third spring from the time of sowing. One pound of seed will produce about 3,000 plants, and to plant an acre of Asparagus requires from 15,000 to 20,000 plants. Some of the finest shoots which push in the early part of the season from certain crowns should be allowed to run to seed. These should have the full benefit of exposure to light and air; and, as they advance in growth, they must be firmly staked, to prevent breakage by wind. When fully ripe, the largest and finest berries, of the deepest red colour, should be selected. They should then be carefully and gradually dried; or they may, after lying about ten days, be squeezed between the hands, and the pulp washed away; but by the former method they keep the longest.

PLANTING.

This should not be done till after the buds begin to push, as this plant, from its peculiar succulent roots, is less susceptible of injury from late planting than most other vegetables; yet it should not be delayed too long after the ground has become fit for its reception, in the end of April, as the sooner it is planted the better will be the result. Plant in rows 2 feet apart, 16 inches being left between the plants in the row. Planting in rows in preference to beds is to be commended, for by so doing the plants are allowed room enough to develope their roots without interlacing each other, and consequently causing an impoverishment of the soil. After being planted two years, every alternate row is best taken up for forcing, thus leaving the permanent rows 4 feet from centre to centre. The direction of the rows for the main crops is immaterial, but for the earliest ones it would be advisable to run them east and west, so as to be more immediately under the direct action of the sun's rays when they are most powerful. As soon as the Asparagus has commenced to shoot an inch or two, level the ground down methodically, mark out the rows 2 feet apart, placing a stake at each end, where the rows are to be planted; stretch and place the line tight from end to end, draw a deep drill with the hoe on each side of the line, thus leaving a little ridge under the line, over which the planter should regulate the roots of the plants on each side, putting in the earth to cover them quickly as he proceeds. The hoe should be regularly used during the remaining summer and autumn months, care being taken to remove by the hand all weeds that come up about the crowns. When the stalks are completely withered in autumn, they should be cut down. Should the produce in spring be required in a green state, which is decidedly the best, an annual dressing of good manure slightly forked in should be given every autumn after the haulm has been cut, and thus left during the winter. In spring, before the buds begin to push, the ground should be again slightly forked over three or four times in dry weather, in order to lighten, pulverise, sweeten, and lay it down in an open healthy state, and not in too fine a condition, to get run together again immediately after the first heavy rains, but open, loose, and rather rough, in order to admit the sun's rays, atmospheric influence, and the rain kindly; such treatment not only forwards its progress, but also allows it to grow freely, clean, and straight without obstruction. I never use the rake for this purpose.

AGE OF PLANTS FOR TRANSPLANTING.

For planting, cleanly-grown and sound two-year-old plants are very generally preferred, although strong one-year-old plants are equally good. The balance of evidence is, indeed, in favour of well-grown one-year-old plants. The following curious experiment by a trustworthy French cultivator deserves consideration. (I have, however, repeatedly planted two and three-year-old plants, with perfect success, and even successfully moved a plantation nearly twenty years old.)

"I planted (No. 1) twelve roots of a year old; (No. 2), twelve of two years old; and (No. 3) twelve of three years old. The results were as follows:—

"First Year.—Of No. 1 all had made growth before May 4th, and the vegetation was fine; No. 2, ten plants started before May 4th, one on the 10th, and the other failed. The shoots were a little stronger than those of No. 1. No. 3, eight plants started before May 4th, one on May 12th, and the other three failed; and, although at first the shoots looked well, they afterwards declined, and on September 15th they were feebler than those of No. 2.

"Second Year.—No. 1, fine vegetation; shoots strong and regular on the 15th of September. No. 2, good growth; shoots irregular, and a little feebler than those of No. 1. No. 3, growth mediocre; shoots very irregular, some roots having eight or ten, but all feeble; another plant died after having produced two stems.

"Third Year.—No. 1, growth magnificent: stems measuring on the 10th of May from 2 inches to $3\frac{1}{2}$ inches in circumference. No. 2, growth passable, but irregular; some tufts small and weak; the finest had shoots on the 10th of May, not more than $2\frac{1}{2}$ inches in circumference. No. 3, growth very middling and irregular; some tufts gave off shoots no bigger than quills, and the best reached little beyond $1\frac{1}{2}$ inch in circumference.

"Fourth Year.—No. 1, growth remarkable; the shoots appeared from the 3rd to the 10th of April, some as much as 4 inches in circumference; they afforded fifty shoots, which formed a bunch weighing more than $6\frac{1}{2}$ lbs. No. 2, growth passable, but a little later than that of No. 1, and with plenty of small shoots; fifty made a half bunch, weighing little more than the half of that cut from No 1. No. 3, vegetation poor, one plant not starting till the 22nd of April; fifty shoots formed only half a bunch, and did not weigh more than $2\frac{1}{2}$ lbs.

"To resume, it will have been seen that the plantation formed with plants a year old gave at its fourth starting, or at the end of three years of plantation, a bunch of Asparagus twice as large as that of either of the others. In other terms, the plantation made with plants a year old produced double that of the one where two-year-old plants were used, and nearly treble that made with plants of three years old."

Jas. Barnes.

SOILS, MANURES, &c.

SOILS FOR POT PLANTS.

Loams are of various kinds, and are strong or light as they may be taken from heavy or sandy soils. For plant cultivation, if the choice can be had, the best comes from the sandstone formation, strong loam being procured from the valleys, and light from upland situations. Loam, when it is possible, should always be procured from very old pastures, and is valuable or not as it contains much or little fibre. Some loams may be skimmed from the face of a rock not more than 3 inches deep, and so full of fibre as, when laid up for a few months, to form a most admirable compost. Loam should always be taken with the Grass on, and the shorter and closer the turf, as from an old sheep walk, the better the soil. Such loam should be cut to the depth of the close fibre—say 2, 3, or 4 inches, but not deeper. Loam which bears rough, coarse Grass is never good for the finer purposes of cultivation, though it may do for ordinary purposes, such as border making and the like. Indeed, it may be laid down as a rule that the more healthy the soil, the finer the plants that will be produced from it. The soil being selected, cut the turves as directed, and cart them home and stack them immediately. In doing this we should have three different stacks; one of strong loam, another of light loam, and a third of half-and-half, and the last double the size of the others, as it would be the most called upon. Loam should be collected when in a state of medium dryness; in fact, just in the state to promote slow decomposition when laid together, but nothing more. It is always best that the vegetative power of all perennial roots and weed seed also should be destroyed before the loam is used for plant potting; but this cannot be effected without subjecting it to considerable heat, more than can be commanded by simple decomposition. In such cases the process of burning may be resorted to, and it is thus effected:—A quantity of wood, such as Pea-sticks, prunings, and the like, being collected, it is built into a conical heap, the same as for burning charcoal, placing the kindling material in the centre, with a flue-hole at the bottom to get to it, and a thick stake to form a chimney through the centre of the cone. Then the turves are built up a foot or 18 inches thick, placing some small brushwood among them as the work proceeds. The stack being completed, light the fire, giving it vent by loosening if not withdrawing the stake altogether, and leading the fire to other parts by making vent-holes where it does not seem to burn freely. The fire fairly lighted, cover the heap a foot or more thick with litter or rubbish of any kind to keep the heat in, and by the time it has burnt out you have a mass of soil not at all charred, but the greater part of it heated to a sufficient temperature to destroy the roots of weeds or any seeds that may be contained in it, and the soil will also be considerably enriched by the process. Leaf-mould I never use, except for soft-wooded plants, and then I either collect it from accumulations in the woods, or prepare it especially. The latter is the best plan, when there is convenience for doing it. The plan is to litter well-fed horses in loose boxes with the leaves of Beech or Chestnut, avoiding those of the Oak as much as possible, because of the tannin they contain, and allow them to accumulate until they get too hot for the feet of the horses. In this way, and by throwing the sides into the middle occasionally, they get impregnated with urine and the more solid portions of the excrement, and when thoroughly decomposed, as the fermenting mass will be in a few months, form the finest manure imaginable for pot purposes, with the advantage that it will have been sufficiently heated to destroy every trace of weed seed, or insect ova—always a nuisance in natural leaf-soil. A portion of leaf-soil so prepared will be found admirable for admixture with loam, for soft-wooded plants of all kinds. Finally, soils, after they are procured, should either be placed in an open shed where the air can act freely upon them, or the stacks should be covered separately, so as to ensure the soil being protected from drenching rain. Nothing tends so much to the vigorous growth of plants as free healthy soils, and these can only be had by proper preparation at the proper time. Good soils are those of a soft unctuous quality, which work smoothly in the hand, as compared with harsh stubborn soils. Get soil of that quality at the proper time, and success is pretty certain to crown well-directed efforts at superior cultivation.

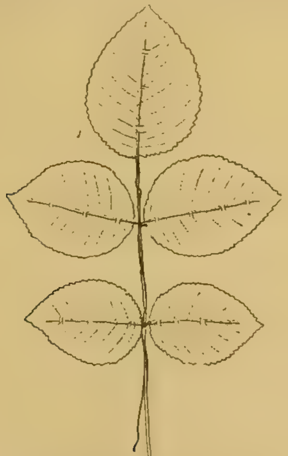
W. P. A.

THE GARDEN IN THE HOUSE.

COAT FLOWERS.

THESE I like associated with fronds of Maiden-hair Ferns, that is if the Fern is an indoor one; as what, for instance, looks so elegant with a Gardenia as a bit of Fern, the bright green spray of which sets off white blossoms of all kinds to much advantage. The coat flower to which was awarded the second prize at Birmingham last year consisted of a small spray of red Combretum, backed with a frond of Maiden-hair. There are numbers of flowers suitable for such an arrangement as this, but care should be taken that such as are selected are good specimens of their respective kinds, and be a little shrouded in the Fern, as many coat flowers I have seen were quite spoiled by having only one spray of Fern, against which was laid the flower; the latter, under such circumstances, looking hard and stiff. Now, had there been another small piece to fill up the space at the base, and a tiny bit drawn across the flower, the effect would have been much enhanced. This should always be done if the flower used is of a bright or glaring colour. The coat flower represented in the accompanying illustration is a bloom of a yellow Rose, arranged in this way. I always like to see a Rose with a leaf belonging to itself behind it, and a few sprays of the young brown coloured growth around it. Such an arrangement may seem easy to manage, but this is not the case, as the Rose leaf must be wired, and that is one of the most difficult of all things to do properly. Take a Rose-leaf, and lay it face downwards on a table. It will then represent a stem with two or three small leaflets on each side, and one at the top. Down the centre of each of these small leaves or leaflets is a comparatively thick midrib, with slighter ones branching off from it. Take a piece of fine wire and pass it through the leaf (always selecting the top leaflet first), under one of these slight ribs, and bring it up on the opposite side of the ribs. Subject two or three of the ribs to this operation, always keeping close to the centre rib: in fact, work as if you were sewing through the leaf, having the long stitches, if I may so call them, on the wrong side, and it will be found to take great care and practice to keep them from being seen on the right side. The wire should be cut off at the top, so as not to let it appear above the point of the leaf. The other part should then be drawn down the long stem, and given a twist here and there; but take care to keep the wire from being visible. The little side leaves should be done in the same manner, the only difference being that the wire is cut off at each end, and not brought down the long stem like the top one. To do all this well takes some little time and trouble; but a Rose leaf, if not mounted as just described, is liable to get out of shape, and to hang down; if wired, however, it keeps stiff, and can be bent back and arranged according to fancy, just as one would adjust an artificial leaf. A. H.

Coat flower (small yellow Rose).


Wired Rose-leaf (back view).

PUBLIC DINNER TABLE DECORATION.

THE most striking change noticeable in London for some time past has been the marked increase of the button-hole flower and bouquet trade. Half-a-dozen years ago such bouquets were to be had only in a few places; now shops full of them are seen in all our leading thoroughfares, and even hawkers in the streets sell tastefully arranged tiny bouquets. At the same time public taste has shown much improvement as regards table decorations and other indoor floral ornaments. Hitherto, so far as we have seen, the floral decorations of public dinner-tables have been poor and stiff in the extreme. At a dinner given the other night at the Inns of Court Hotel, more than the beauty of a dozen flower-gardens was tastefully arranged in the great hall of the hotel. Thousands of flowers and plants were employed, and these all in the freshest health. In addition to the best flowers and plants usually employed for table decoration, such novelties as superb pitchers of various kinds of Nepenthes depended from some of the vases, but the charm of the whole consisted in the tasteful artistic arrangement. No stiff, poor, flat, or round-headed compositions were these; but free and graceful as nature itself. All the principal varieties of Nepenthes were used, as well as the long trumpet-shaped Sarracenias judiciously arranged with Adiantum Farleyense, and here and there glowing spathes of Anthurium Scherzerianum, long and graceful fronds of various Ferns, large spikes of Dielytra spectabilis, and the pretty curving fronds of Solomon's Seal. The glass vases were about 18 inches high, and the size of each group of flowers when arranged would be about 2 feet 6 inches across the widest part; these were set at intervals along the tables, and between them were placed "Dobson" dishes. These were filled in pairs to match with white, pink, and scarlet; the upper portion of the dish was scarlet Geranium, with crowning masses of Geranium Christine resting on Lycopodium denticulatum. The lower part or base of each stand had its bed of Lycopod, with here and there magnificent blooms of Maréchal Niel and other grand Roses, interspersed with Lilies of the Valley. The whole of the dessert dishes were surrounded with glass circles filled with Lycopod and fine trusses of scarlet Geranium Leonidas, one of the finest; the old favourite Dr. Lindley; Madame Vaucher, white, and the pretty Christine, pink. Mr. Wills considers these three colours the most effective for dinner-table decoration, and seldom uses any other colours. He pays upwards of £400 annually for the cut blooms of these three varieties, and upwards of £700 a year for Lycopodium denticulatum. His weekly consumption of this simple plant is over 300 dozen during the London season. The whole of the floral decorations were supplied by Mr. Wills.

Azalea indica.—This plant, with its many fine varieties, will bloom in winter, if cultivated in a double window, and even in a heated room. When grown in a room where the temperature is kept above freezing point, specimens with well-developed flower buds may be brought into bloom early by being removed into a warm room. The best kinds for this purpose are the white-flowered A. indica alba (or A. ledifolia) and A. amœna, but many of the other kinds will also succeed treated in this way.

WALL GARDENING.

It is not without considerable observation of the capabilities of walls, even walls in good repair, to grow numerous rare and pretty plants, and moreover keep them in perpetual health without trouble, that we call attention to the subject. Most of those who are blessed with gardens have usually a little wall surface at their disposal, and to all such we can name some plants that will grow thereon better than in the best soil. A mossy old wall, or an old ruin, would afford us a position for many dwarf rock plants, which no specially prepared situation could rival; but even on straight and well-preserved walls we can establish some little beauties, which year after year will abundantly repay the tasteful cultivator for the slight trouble of planting or sowing them. Those who have observed the way dwarf plants grow on the tops of mountains, or on elevated stony ground, must have seen in what arid positions many grow perfectly healthy—tufts springing from an almost imperceptible chink on an arid rock or boulder. They are often stunted and diminutive in such positions, but always more floriferous and long-lived than when grown fat and large upon the ground; in fact, their beauty is often intensified by starvation and aridity. Now, numbers of alpine plants perish if planted in the ordinary soil of our gardens, and many do so where much pains is taken to attend to their wants. This results from moisture at the root in winter, the plant being rendered more susceptible of injury by our moist green winters inducing it to make a lingering growth. But it is an interesting and useful fact that, by placing many of these delicate plants where their roots can secure a comparatively dry and well-drained medium, they remain in perfect health. Our attention was first called to the great adaptability of walls, ruins, &c., for growing many choice rock plants while visiting Dublin a few years ago. Near Lucan, we observed the upper portion of the old inclosing brick wall of a garden—indeed, all of it that was out of convenient reach—covered with a dwarf, green, mossy-like plant, and before coming close to it we asked the gardener what it was that made the wall so green. "It is," he replied, "a plant like a moss; but every spring it is covered with the most 'beauteeful' flowers." And, "sure enough," this is its character, for it proved to be the pretty little Erinus alpinus, which would have little or no chance of existing on the level ground in the same place, and which had, in the old days of cultivating rock plants, escaped by seed on to the wall, and there found a home as congenial as its native one. This will suggest at once that many plants from latitudes a little further south than our own, and from alpine regions, may find on walls, rocks, and ruins, that dwarf, ripe, sturdy growth, stony firmness of root medium, and dryness in winter, which go to form the very conditions that will grow them in a climate entirely different from their own. There are many alpine plants now usually seen cultivated in frames, even in places where there is a fine collection and much knowledge of alpine plants, that the most unpractised reader may grow in such positions as we indicate.

We proceed next to point out these plants, merely requesting the reader not to ask if what we advise is practised in gardens growing collections of alpines, but to put it to the test of experiment. The idea of growing such splendid alpine plants as the true Saxifraga longifolia of the Pyrenees on the straight surface of a wall, has never even entered into the heads of our botanists, who have in the public gardens the largest collections of these plants, and probably some of them would laugh at it; but we affirm that it is in the power of any person to succeed with them, and the trial can be made at a mere nominal cost. Generally, the best way to establish them is by seed. The Cheddar Pink, for example, grows on walls at Oxford, much better than we have ever known it do on rock-work or on the level ground, where indeed it soon goes off; a few seeds of this plant, sown in a mossy or earthy chink, or even covered with dust of any fine soil that be might be at hand, would soon take root and grow into neat little specimens, living, moreover, for years in that dwarf and perfectly healthy state so agreeable to the eye. So it is with most of these plants: the seedling roots vigorously into the chinks, and gets a hold which it rarely relaxes. Only the other day it was stated that Myosotis dissitiflora had taken possession of a wall in this manner. A few seeds of it had probably been dropped in some of the crevices by birds; there they grew and formed tufts of bloom that were the admiration of everybody. But of some things seeds are not to be had, and therefore it will be often necessary to use plants. In all cases young plants should be selected, and, as they will have been used to growing in fertile ground, or good soil in pots, and have all their little feeding roots compactly gathered up near the surface, they must be placed in a chink with a little moist soil, which will enable them to exist until they have struck root into the interstices of the wall. In this way we have seen several interesting species of Ferns established, and also the silvery Saxifrages; and we can assure the reader that the appearance of the starry rosettes of these little rock plants (we mean the kinds with the crustated leaves, like longifolia, ligulata, &c.) growing flat against the wall, will prove strikingly beautiful. The most suitable kinds in the following list are marked with *.

- Acæna Novæ Zelandiæ (mossy walls)
- Achillea aurea
  - *tomentosa
- Adiantum Capillus Veneris (on moist warm walls)
- Alyssum montanum
  - saxatile (tops of old walls and ruins)
  - spinosum
- Antennaria minima (mossy chinks, with a little soil)
- Antirrhinum rupestre
  - *majus
  - Orontium
- *Arenaria balearica
  - cæspitosa
  - ciliata
  - graminifolia (old walls)
  - montana (ruins)
  - *verna
- *Arabis albida (ruins and old walls)
  - arenosa
  - blepharophylla (old mossy walls)
  - lucida variegata
  - petræa (old mossy walls)
- Asperula Cynanchica
- *Asplenium Adiantum nigrum
  - Jfontanum
  - germanicum
  - lanceolatum
  - Ruta muraria
  - *septentrionale
- Astragalus monspessulanus (ruins and old walls)
- Bellum bellidioides
  - crassifolium
  - *minutum
- Campanula Barrelieri
  - *rotundifolia
  - *fragilis
  - fragilis lanuginosa
  - *garganica
  - pumila
  - pumila alba
- Centranthus ruber
  - ruber albus
  - ruber coccineus
- Ceterach officinarum
- Cheiranthus alpinus
  - *Cheiri
  - Cheiri pleno
- *Coronilla minima varia (old walls and ruins)
- *Corydalis lutea (a fine wall plant, even high on walls in warmer countries than this)
- *Cotyledon Umbilicus
- *Dianthus cæsius
  - deltoides
  - monspessulanus
  - petræus
- *Draba aizoides
- *Erinus alpinus
- Erodium romanum (old walls)
  - Richardii
- Gypsophila muralis (old walls and ruins)
  - prostrata
- *Helianthemums (many of the varieties might be grown upon old ruins, stony banks, &c.)
- Hutchinsia petræa
- *Iberises (all the varieties, on old ruins, &c.)
- *Ionopsidion acaule
- Iris germanica (some of the Irises of the germanica type we have seen growing freely on the top of earth walls, in thatch, &c.)
- Koniga maritima (ruins)
- *Linaria Cymbalaria
  - Cymbalaria alba
  - lusitanicus
  - vulgaris
- Linum alpinum (old walls and ruins)
- *Lychnis alpina
  - Flos Jovis (old walls and ruins)
  - lapponica
- Malva campanulata (ruins)
- Ononis alba (old walls and ruins)
- Petrocallis pyrenaica (mossy old walls, and rather moist position)
  - bœotica
  - (north side of old walls)
- Polypodium vulgare and varieties
- *Reseda odorata (sown in chinks in walls, this sometimes becomes perennial, and looks very pretty drooping)
- Sagina procumbens pleno
- *Santolina lanata
- *Saponaria ocymoides (old walls)
- Saxifraga bryoides
  - caryophyllata
  - cæsia
  - *crustata
  - cuscutæformis
  - diapensioides
- Saxifraga Hostii
  - *intacta
  - ligulata
  - *longifolia
  - pectinata
  - pulchella
  - retusa
  - Rhei
  - *rosularis
  - Rocheliana
  - sarmentosa
- Schivereckia podolica
- Sedum acre
  - *acre variegatum
  - Aizoon
  - *album
  - *anglicum
  - arenarium
  - brevifolium
  - *californicum
  - cæruleum
  - *dasyphyllum
  - elegans
  - Ewersii
  - *farinosum
  - globiferum
  - Heuffelli
  - *hirtum
  - hispanicum
  - *kamschaticum
  - montanum
  - multiceps
  - piliferum
  - pulchrum
  - sempervivoides
- *Sempervivum arachnoideum
  - soboliferum
  - spurium
  - *sexangulare
  - sexfidum
  - *tectorum
- Silene acaulis (moist walls, to be first carefully planted in a chink)
  - *alpestris (old walls)
  - rupestris
  - Schafta (old walls and ruins)
- Symphiandra pendula
- Thlaspi alpestre (ruins, &c.)
- Thymus citriodorus (earthy chinks)
- *Trichomanes, and vars.
  - viridis
- Tunica Saxifraga
- Umbilicus chrysanthus
- Veronica fruticulosa
  - *saxatilis
- Vesicaria utriculata (ruins, &c.)

THE GARDENER'S SONG.

The Gardener's is the oldest
And the noblest craft as well;
It was the only work thought fit
For man before he fell.
And though the first of brotherhoods
Our own we masons call,
That "grand old gardener," Adam, wore
The apron first of all.
And so we'll sing the gardener's song,
For that's the best of trades,
And the King of Trumps in our esteem
Shall be the King of Spades.

The Gardener is the richest man,
For all he has he *tills*;
His *stocks* are always rising,
His banks he always fills.
When other folks are saving,
He may go it without stint;
He never can be short of cash,
For he always has the *Mint*.
And so we will sing, &c.

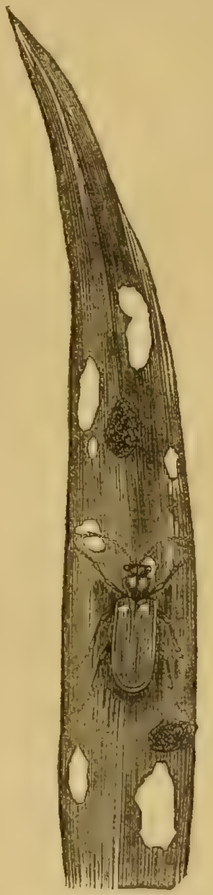
The gardener's lot is freest
From sorrow or disease,
His *pulse* is always healthy,
He never wants *Heart's-ease*.
And beauty blushes where he goes.
With smiles which never dim;
And *Love-lies bleeding* at his feet,
And two-lips glow for him.
And so we'll sing, &c.

GARDEN DESTROYERS.

CRIOCERIS MERDIGERA.

The leaf represented in the accompanying woodcut is that of a Lily, which has been partially devoured by the larva of a small beetle, called Crioceris merdigera, which is pale red above and black below, and is very fond of the leaves of all kinds of Lilies, and more especially of the Crown Imperial. The beetle is figured on the leaf as twice its natural size. On the same leaf the reader will also see two darker masses—one in the middle, in front of the beetle, and the other a little behind it, towards the right hand edge of the leaf. These dark lumps are intended to represent, not the larva, but all that one sees of the larva. They are greenish, gluey-looking pellets, under which the larva is hidden, and consist of its excrement, which, by a curious provision of nature, is made to fall upon its back, and cover it as with a mantle. The reason is, that the larva has a transparent and very delicate skin, which cannot stand exposure to the sun and air. Such exposure would speedily destroy it, and to meet the emergency nature has given it a turned-up and slightly reversed tail, so that its droppings, instead of falling behind it, fall forwards on the back, and, by the contraction of its segments, each successive accretion shoves on the previous accumulation, until the whole back is covered, and when at last it falls, it is over the head instead of behind the tail. If this covering is removed from its back, the little creature begins eating with great avidity, as if it knew the best means of reclothing itself, and in a couple of hours it will be again covered. In other respects the larva is very lazy, moves very little, and only thinks of changing its place when the leaf has been a good deal injured.

The perfect insect passes the winter in the pupa state in the ground, from which it emerges in May. It then pairs, and little congregations of them may be seen at that time on the Lily leaves so engaged. The female then lays her eggs. These she deposits in little heaps, containing five or six eggs, on the underside of the leaf. It takes about a fortnight to hatch the eggs, and when the young larvæ come out they settle themselves to feed on the leaf in company. They may be seen arranged in little lines thus occupied until after the first change of skin. Then they separate, and each goes its own way, and they are then found scattered feeding both above and below the leaf. The larvæ do not take long to attain their full development. In about a fortnight they descend to the ground, and, burying themselves in it, they there pass into the pupa state, in which they remain for a similar period. In fact it is curious that each stage of its life seems to occupy about the same length of time—the eggs take a fortnight to hatch, the larva a fortnight to grow, the pupa a fortnight to rest; then the perfect insect comes out, unless it is in autumn. In that case the pupa remains in the ground all the winter, and the perfect insect only comes out next spring.



Beetle-eaten Lily-leaf.

This insect is so conspicuous, whether in the perfect state or in its larval disguise, that it is not difficult to keep it within bounds. It is as easily caught as seen, and a little care in looking after them, seizing them, and destroying them, will suffice to do so. The garden must be badly kept where they are abundant, and although they may seldom do much actual harm to the bulbs, the gnawed leaves covered with dirt or dirt-bearing larvæ so disfigures the plants that they ought never to be allowed to establish themselves. A. M.

The Bullfinch.—Your correspondent, Mr. R. Gilbert, is in error as regards the bullfinch; it is not protected by law, but, though a notorious evil doer, I think it would be well to spare it at this time of the year, as the birds are nesting, and will soon have young; so by destroying the old birds those in the nest will be left to die a lingering death from starvation. There is no law in force at this season for the bullfinch but that of humanity, therefore, for humanity's sake, spare the old birds. I have nothing but this to urge in its favour for mitigation of punishment. I consider it does more injury to the garden and orchard than any bird with which I am acquainted. This year bullfinches are more than usually numerous and bold. In Kent, where my garden is, out of some hundreds of Plum, Gooseberry, and also flowering shrubs, I shall have no show, from the bloom-buds being eaten out by these bloom-bud eating birds, and in some instances my trees and bushes are utterly spoilt. To give some idea of the quantity of this garden pest I may mention that a neighbour of mine shot one hundred and seventy in one week, and still they were about our trees in packs of from forty to sixty. I see by the *Field* that in various parts of England they have been seen in equally large flocks. I protect the birds generally on my ground, especially starlings, thrushes, larks, linnets, and chaffinches; blackbirds I endeavour to keep down somewhat, but bullfinches I think have no good quality, and I do not wish to have one about, instead of which this year there are great numbers. Where have they come from?—Harrison Weir.

Maggots in Oranges.—Can you, or any of your correspondents inform me whether Oranges have been known to contain maggots? I opened an Orange a short time ago, apparently a good one to look at, and found a little nest of small live maggots. The rest of the fruit, where there were no maggots, tasted much like any other Orange, only rather flat.—Rushallite. [The maggot to which our correspondent refers is too familiar in Orange-growing countries. The first notice we find of it is by Latreille, in Cuvier's "Règne Animal," vol. v., p. 534, who observes that the planters in the Isle of France cannot procure sound, ripe Oranges, on account of the excessive numbers of a small dipterous insect of the genus Tephritis, which lays its eggs on the fruit. M. Cattoire, then Paymaster of the Forces in the Mauritius, subsequently said that this little fly laid its eggs "in the ovary of the blossom"; but Mr. Mackay, who first described the fly, under the name of Ceratitis citriperda, in the *Zoological Journal* for 1829, agrees with Latreille that the egg is laid on the fruit itself. "As for St. Michael Oranges," he says, "towards the end of the season, namely, during the months of March, April, and May, whole chests are destroyed by this fly, specimens of which are easily procured, as they may be bred from the larvæ, which are to be found in almost every one of those damaged Oranges which our barrow-women display for sale in the month of May." It is a very curious and unexpected fact—we say unexpected because of the great difference of the two fruits concerned—that this fly has migrated in England from imported Oranges to indigenous Pears, and has done considerable injury to them. The life-history of the insect, with a very excellent figure of the fly, are given in No. 61 of the *Entomologist*, by Mr. Newman. We recommend our correspondent to procure this pamphlet. He will find the information on the subject full and interesting. It is published by Simpkin, Marshall, & Co., at 6d.—*Ed. Field.*]

A correspondent of the *Gartenflora* calls attention to the mischief done by bees in flower gardens. Besides hybridising plants which it may be desired to keep true to name, he adds that, when certain tubular flowers (as those of Salvias, &c.), are so narrow that the bees cannot enter them, they gnaw a hole at the base of the flower in order to get at the nectary, and, in doing this, often injure the ovary so much, that the fructification is destroyed. Salvia macrantha (patens) in particular, he states, is hardly ever found to seed where bees have access to it.

NOTES AND QUESTIONS ON GARDEN DESTROYERS.

Ants.—I have a house of Melons just setting, and being greatly troubled by ants eating the pollen, my foreman adopted the following plan of getting rid of them. He shot two or three birds, and merely running the knife down each side of their breasts, laid them on the soil as traps. In this way we catch them by the thousand, and being prepared with water to shake them into, speedily destroy them.—R. Gilbert, *Burghley.*

Small Snails Found Among Tan.—Will you kindly tell me the name of the enclosed, and also how to destroy them? They infest the tan in which our pot Vines are plunged.—E. H. W. [The pretty little snails sent herewith are Zua lubrica. They are very common under stems and among fallen leaves in both moist and dry places in all parts of the British isles. They ascend to a considerable elevation among mountains, and have a very wide range throughout Europe. We see no occasion for destroying such beautiful little objects, more especially as they are not recorded to have done any injury. The shell is figured in Forbes' and Hanley's, plate cxxv., fig 8, and the animal, plate GGG., fig. 5, also in "Gray's Manual of Land and Fresh-water Shells," plate vi., fig. 65.—E. N.]

WORK FOR THE WEEK.

PRIVATE GARDENS.

Conservatories.—In these the finer kinds of Rhododendrons are now in great beauty, and none more so than the Sikkim, waxy, crimson-flowered R. Thomsonii. Some which have started into growth, and are planted out, must be well supplied with water; all decaying flowers and seed-pods should also be removed from them, unless it be desired to save seed, and even in that case only a few heads should be left on each plant. Azaleas done flowering remove from the conservatory, and repot; but if the plants are large, they may remain in pots of a given size for some years, without being disturbed. In that case, however, give a little manure-water during the growing season. Camellias, Acacias, Myrtles, Araucarias, Eugenias, and similar plants put out in beds and borders are now growing freely, and consequently require extra attention in the way of watering. Keep up a succession of blooming plants from other houses and pits; many stove plants and Orchids, indeed, may be transferred to the conservatory while in flower, and if they are placed in the warmest part of it, they will continue longer in beauty than if left in warm houses; after flowering, they should be replaced in their former quarters. Pot on plants of double Petunia, using light sandy loam and well-decayed manure for the purpose. Mimuluses in conservatories are very ornamental, and used in that way a strong rich moist soil and cool position suits them best. Lemon-scented Verbenas also make good conservatory plants, as do likewise well grown and well-flowered Heliotropes.

Greenhouse Plants.—Pelargoniums now coming finely into bloom will be benefited by occasional applications of weak manure water. Herbaceous Calceolarias should now be finally and neatly staked, kept near the glass in a cool house, and also assisted with a little weak manure water. Stop, stake, and tie Fuchsias, keeping the winter-struck ones in rather warm and moist quarters, and permitting the old cut back stumps to come into flower in a cool house. Keep Coleuses in a warm house, placed here and there amongst dwarf plants on inverted pots, so as to raise them up to the light. Keep Balsams regularly shifted; as a rule, pots 6 or 8 inches in diameter are quite large enough for them. If from growing plants the flower-buds are pinched off, a late display of bloom will be the result. Pot on Cockscombs into 6-inch pots, and sow some seed for a successional supply of them. Of Hydrangeas introduce a few more plants in heat, and repot cuttings put in when the old plants were cut down. Sow annuals in succession, and pinch out the tops of such as Rhodanthe Manglesii. Pot Musk for conservatory use; and fill up wire baskets with Isolepis gracilis, Asystasias, Tradescantias, Musk, Panicum variegatum, Achimenes, Ferns, Selaginellas, &c. By keeping such baskets for a time in a warm, moist atmosphere, and afterwards gradually hardening them off, an effective display is soon attained.

Frames.—These will now be mostly occupied with bedding plants, which should be freely exposed whenever the weather is favourable. Keep the plants also as far apart as space will permit. Hyacinths, Tulips, Crocuses, Narcissi, &c., done blooming, should now be kept in frames, and gradually dried off as soon as their bulbs are ripe. Cinerarias that have flowered may be cut back and placed in frames. When they have pushed up suckers, select the best of them, and pot them singly in 60-sized pots, which may also be kept in a cold frame. Antirrhinums, stored in pots during the winter, may be planted out as soon as the weather has become warmer; let any required for flowering indoors be repotted and have their shoots pinched back. Strike cuttings of Phloxes, and transfer specimen plants of them to their flowering pots. Keep Pansies in frames having a north aspect, thin out their shoots, and use the thinnings as cuttings. Auriculas done blooming should be kept in a cool, airy frame, protected from rain.

Hardy Fruit Garden.—Pay particular attention to the protection of the blossoms of fruit trees on walls. Thin out Apricot fruits a little where they grow in clusters, but leave considerably more than an ordinary crop undisturbed until the stoning period has been passed. Disbudding of Peach and Nectarine trees must soon receive attention; strong growths on vigorous shoots must be well reduced, whereas the weaker ones should be sparingly dealt with, so as to preserve an equilibrium in the tree. Insects of all kinds must now be looked after, the curling of the leaves indicating their presence. Green fly will now be troublesome, but the use of the syringe or garden engine is very destructive to them; tobacco-water, in which a little soft-soap and sulphur has been mixed, is very efficacious in removing them. Pear trees are everywhere now in full bloom; but Apples, as a rule, are still comparatively dormant. The only exceptions are such early sorts as the Oslin and Early Peach, which are already opening their bloom-buds.

Kitchen Garden.—Make up deficiencies from seed beds, and hoe between lines of young plants in order to kill weeds and promote growth. As soon as seedlings are fairly up, whether they are in beds or rows, they should be weeded and thinned. Thin out Cabbage plants, and transplant the strongest as soon as they are fit to handle and ground is prepared for them. Transplant Cauliflowers sown in frames in February and sow seeds for early autumn use. Plant out Brussels Sprouts for early crops, and sow some Savoys for late use. Asparagus may yet be safely transplanted; plantations made, indeed, in the first fortnight in May thrive quite as well as those put in earlier. Sow some Borecole to succeed the Potato crop. Sow a few Cardoons in rows where they are to remain; seedlings of them raised in frames should be gradually hardened off before they are consigned to the open garden. Thin Carrots a little, but not too much at first, as a second thinning should be the final one. Winter Spinach, when done with, should be destroyed, the ground manured and dug, and held in readiness for Cabbages or for Cauliflowers. Prepare trenches for early Celery 4 feet apart; market growers make theirs 5 feet apart. A good admixture of rotten cow or horse manure should be incorporated with the soil in the bottom of the trenches. Transplant Basil from frames to the open air in warm positions; Bush Basil being the hardier, though the smaller, of the two, is the kind most commonly used, yet common Basil is also frequently grown. Transplant knotted Marjoram from frames to a warm border or quarters. Of the small-rooted Beets (which are usually the best) make another sowing if necessary, and thin out those first sown. Keep plants of New Zealand Spinach still in cold frames, but gradually harden them off, so as to prepare them for transplantation at the end of the month. Of Mesembryanthemum tricolor, the leaves of which are so useful for garnishing, prick off those sown last month into boxes, and thence to well-sheltered positions in the open ground towards the end of the month. Earth up Potatoes, and keep the hoe at work amongst them. Sow successions of the white Paris Cos and Neapolitan Cabbage Lettuces. Transplant those from earlier sowings as they become fit to handle and ground becomes vacant for them, and with a piece of matting tie around the middle the most advanced plants of the early sowings, in order to cause them to heart properly. Sow French Beans in succession—the dwarfest sort 18 inches apart, the Newington Wonder and Negro 2 feet apart, and the red and white Runner Beans in rows 4 feet asunder. The intervening spaces may be cropped with Spinach, Lettuces, or any other quick-growing crop; and between the rows of late crops Brussels Sprouts may be planted. Transplant Leeks from frames and early sowings; and, if necessary, sow a few seeds for a late crop. Harden off Tomatoes, as they will be required to be planted out in a week or two if the weather continues mild. Top a row or two of the earliest Peas when they come into bloom, so as to induce them to form pods sooner than they otherwise would do. Plant out Vegetable Marrows under handlights. A barrowful of fermenting manure placed under each plant greatly assists their growth. Make successional sowings of Spinach, Radishes, Mustard, Cress, Rape, and a few other small crops.

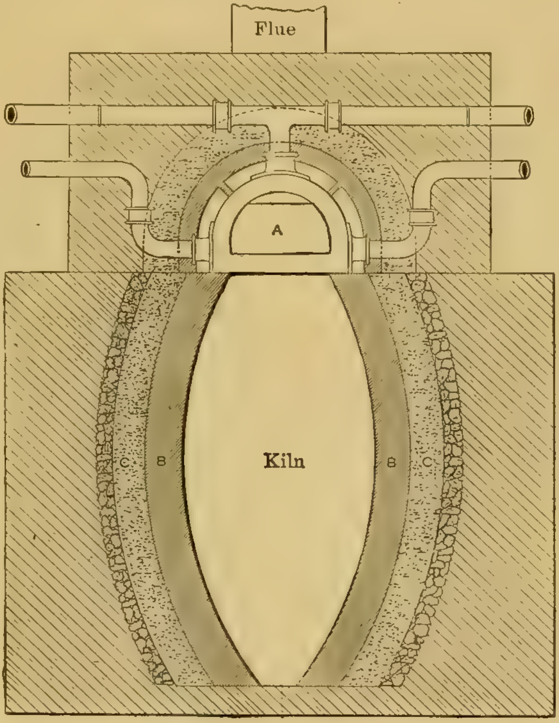
MARKET GARDENS.

Owing to the continuance of ungenial weather, Cucumbers planted out in frames must be well protected with litter, especially at night. Plant out Vegetable Marrows under handlights, in rows about 12 feet apart, and 6 feet plant from plant in the row; under each plant should be a barrowful of fermenting manure. Be careful to cover around the base of the handlights with stable litter, which must also be thrown over them at night. Between the rows half-a-dozen lines of Cos Lettuces may be planted, as they will be removed before the Vegetable Marrows grow sufficiently strong to encroach upon them. Tomatoes should be pricked off singly into 4 or 6-inch pots, which should be plunged in cold frames, and kept rather close for a time; but afterwards gradually exposed, so as to thoroughly harden off the plants before planting-out time. Still protect French Beans grown in frames or under other sheltering material, such as hoops and mats, but admit plenty of fresh air, unless it be cold or frosty. Sow another crop for succession. Keep the hoe at work amongst crops of Lettuces, Cauliflowers, Cabbages, young Rhubarbn &c. When clearing the Cabbage plantations, insert a wooden, peg or stake beside the finest plants, the tops or hearts of which may be removed for market, but the stumps retained for seed. A willow, or piece of matting, should be tied around the Cabbages and Cos Lettuces to cause them to heart well. Transplant slips of Thyme and Sago under fruit trees. Transplant Parsley into moderately open situations. Sow a few Nasturtium seeds, or a line of Beet, along both sides of Asparagus beds, or two rows of French Beans may be sown on the top of the ridges. Mark, 4 or 5 feet wide, spaces across the Onion fields, and set a man with a short narrow hoe in each space to clean and thin the crop. Early Turnips that were sown on hotbeds are now pretty large; make, therefore, successional sowings, according to the demand and the land that can be spared for that kind of crop.

GARDEN STRUCTURES.

HEATING HORTICULTURAL BUILDINGS WITHOUT COST.

I have just witnessed, at Dromore Castle, County Kerry, Ireland, a method of heating horticultural buildings which, although not quite new, is here, I believe, now for the first time carried out in a thoroughly practical and economical manner by a mode of working in which the cost of fuel is entirely neutralised by a compensating process. I found the principle in full and successful operation, and learnt that it had been patented by Mr. Cowan, the manager of the gardens at Dromore, who is the inventor of the system as at present applied. The principle by which this has been effected is this, namely, that the coal producing the necessary supply of heat is made to perform a distinct operation at the same time, the product of which is sufficient to pay the entire cost of the coal, while the heat, being prevented from escaping, warms a boiler, which supplies the adjoining plant-houses or vineries with a steady heat, under strict control, upon the ordinary hot-water system, from which it differs only in the all-important respect, that it is worked without one farthing of direct cost. Mr. Cowan describes the principle of his invention as the "compensating principle," and tells us briefly in his short but pithy prospectus, "first, it saves the entire cost of fuel; secondly, it does the work with more regularity than the ordinary systems; thirdly, that it requires no night attendance." The system consists, as Mr. Cowan next tells us, of the combination of a lime-kiln with an ordinary hot-water apparatus, and the only wonder is, says Mr. Trench, the well known agent of the Marquis of Lansdowne, that the system, being so simple, has not been adopted long ago. Mr. Trench has seen the system in full operation, and is therefore a competent authority to pronounce an opinion as to its merits. The following statement will show how the entire cost of fuel is saved: Each cwt. of anthracite coal (or coke) produces 3 cwt. of lime, worth 1s. 9d.; cost of limestone, 5d.; cost of coal, 1s. 3d.=1s. 8d.; profit, 1d. In a kiln 8 feet deep, 6 cwt. of lime is produced in twenty-four hours, making a profit of 2d. per day. The labour required, one man two hours per day to an 8 feet kiln to break limestone, charge kiln, regulate boiler, &c., being certainly not more than would be required for an ordinary hot-water apparatus. An 8 feet kiln at Dromore is found sufficient to heat, to any required degree, a range of plant houses or vineries of 200 feet in length, the boiler being an ordinary saddle boiler; and it is calculated that if a boiler, designed like that in the annexed plan, were used, a range of 400 feet might be heated with the same sized kiln. The entire saving of the cost of fuel is of course most important, especially in a commercial point of view, and must necessarily work a complete revolution in the production of all table-fruit requiring heat in its culture, such as forced Grapes, and Grapes in ordinary season; forced Peaches, forced Plums, forced Strawberries, and other fruits; which may henceforth be produced in large quantities, with no outlay for fuel. I have already heard of a company being formed to work the principle largely in the chalk districts of Kent and Surrey, and doubtless many enterprising horticulturists will only be too glad to adopt a system which promises to secure to them, in every respect, such an enormous saving, and which all may practise on paying to Mr. Cowan a small royalty, the amount of which is not, I believe, at present fixed.



Mr. Cowan's Lime-kiln Heating Apparatus.

I visited the kiln at ten in the evening, and on examining it, it was quite evident that the 8 feet deep of steady fire would require no stoking, and that it would do its duty through the night for twelve hours more, having been last charged about ten in the morning, so that recharging once in twenty-four hours seems to be amply sufficient. The thermometers in the three different houses stood respectively at 61°, 66°, and 70° Fahrenheit, the heat desired by Mr. Cowan, who assured me that there would be no diminution of heat in the morning, and that he could confidently leave the kiln and houses to take care of themselves, during the night. I visited the houses again at nine the following morning, and found no diminution whatever in the temperatures, though the fire had sunk down some 6 or 7 inches in the kiln.

Supposing the plant for the carrying out of the combined system of lime-making and heating to be put up together, the cost of the addition of the kiln and its appurtenances would only be, for an 8-feet deep link, about £10 to £15 more than a stack of fuel-consuming apparatus on the usual hot-water and coal stove principle. Mr. Cowan informs us that he was led to the experiments which have resulted in his now perfected system by the present high price of coals, as he felt that it could not be to the interest of his employer to continue the ruinously expensive heating of the plant and Grape-houses with coals at 35s. to 40s. the ton. The proverb says, "It is an ill wind that blows nobody good;" and the extravagant price of coals has led to what will evidently prove of most material advantage to those who may adopt this system.

Description of the Diagram (which is a vertical section of the whole apparatus): A represents the boiler, placed over the cavity of an 8-feet lime-kiln; B, a casing of fire-bricks; C, a coating of sand, kept together by a layer of Portland cement, with an outside layer of concrete. The arrangement of the flow and return pipes will, of course, be easily understood.

H. N. Humphreys.

The Weather in Northamptonshire.—Friday, the 25th ult., snowing here all day, succeeded by a sharp frost at night; Saturday, cold, with storms of sleet and snow at intervals during the day; Sunday, cold north winds, turning the osiers yellow. Pear trees in full bloom, so that we again know what to expect in the way of crops of fruit.—R. Gilbert, *Burghley Gardens.*

A writer in the *American Agriculturist* quaintly observes, "We are not, after all, up to our English brethren in devising names for horticultural fixtures and appliances. Does frost injure your Peach trees?—Then grow them under the 'Portable Fruit tree Crymoboethus.' If this is not sufficient protection, cover the glass with 'Frigi-domo,' and increase the temperature inside by means of a 'Calorigen.' Should the trees grow out of bounds, you can shorten them with an 'Averruncator,' and should scale, mealy-bug, and the like molest, you have only to apply some 'Phytosmegma.' Truly it must be lots of fun to 'horticult' in England."

ASTERS.

I am a great lover of the Aster family in its widest sense; in fact, I sometimes question whether I am not a Composite myself. At one season or other of the year you will always find a representative of this family in my garden. At the present moment I have the latest improvement from Paris of the Leontodon in all its glory, and in the autumn my "Last Rose of Summer" is the most recently introduced German Aster. Last year there was an unusual number of new names of Asters in the German catalogues, and my old favourites, the Pæony, the Victoria, Boltze's Bouquet, and a few others which had always done me good service, were completely lost in the grandiloquent descriptions and the classical names attached to the new comers. As a few shillings is not a matter of much consequence with me, I thought I would indulge myself in all these grand varieties so puffed up at home and abroad, and accordingly I invested in packets of them all. I can assure you, Mr. Editor, the quantity of seeds received was small compared with the amount of the coin paid for them. But one does not care much about that when a hobby has to be gratified. At the same time I took the precaution to have my usual supplies of my well-tried friends. Well! sir, I would not bother you with my grievance now, but many are at the present time sowing Asters, and I should like them to benefit by my experience. Most of the new varieties proved to be simply bad stocks of well-known kinds. In my note-book the first is New Bismarck (I suppose in compliment to the great statesman). I said when I saw his namesakes, "May he never be in such bad company!" They were the tag-rag and bobtail of the flat-petalled Asters, and I was almost going to say something stronger, but I won't. The Ox-eye Daisy was a queen to some of them. Next came the Newest Shakespeare. Wouldn't the venerable bard have wept had he seen such a desecration of his name? Then there was the Quilp of Asters, the Tom Thumb, an uncouth starveling, all legs and arms. Oh! dear, I said, is that what I have got for half-a-crown? Next came Newest Humboldt—but I shall not further occupy your space. My object in saying so much on the subject is simply to prevent your Aster-loving readers from being taken in as I have been. Leontodon.

JOINTING HOT-WATER PIPES.

Your correspondent's inquiry (see p. 302) respecting the fitness of india-rubber rings for jointing hot-water pipes merits more than a passing remark. My own experience, though small, has satisfied me that these rings make entirely water-tight joints, and are easily fixed, effecting a great saving of time, compared with the old-fashioned mode of packing with hemp and lead. The ring being drawn over the end of the pipe to be jointed, one man holds it steady while another pushes it into the socket, the ring rolling round and becoming flattened and perfectly water-tight as the pipe "goes home." When all the piping is fixed, a little wet Portland cement is run in round the joint with the fingers, and then the whole is complete. Some hot-water pipes fixed here were jointed with these rings, and the men who used them stated that they were greatly superior to the old packing method, which causes delay, and is not unfrequently productive of leaks and annoyance. It is, however, desirable to pack such joints as are within a few feet of the boiler, as the heat there is sometimes detrimental to the india-rubber rings. Alex. Dean.

Bedfont.

I can confidently recommend your correspondent "W." (see p. 302) to use vulcanised india-rubber rings for this purpose, having at the present time several hundred feet of piping, both for top and bottom heat, connected in that way under my own supervision, the greater portion of which was put up about eight years ago, and the remainder at intervals up to as late a period as the end of last year, all of which, I am happy to report, act most efficiently, without a single leakage; and, apparently, the joints will continue sound for an indefinite period. I may add that the system possesses many advantages over iron joints, not the least of which is its non-liability to burst the sockets, as iron-filing joints are apt to do if not judiciously made. Of this a conclusive proof occurred in two greenhouses here, in the shape of nearly every pipe-collar cracking, owing to the use of iron cement, which, doubtless, had been rammed in too hard, or had contained too much sal ammoniac, the result of which was excessive rusting and consequent bursting of the collars. This mishap, however, did not take place all through the work simultaneously, but was prolonged through a series of years, until thorough repairing became necessary. This I did by having the whole of the sockets cut off with a "cold" chisel, and double sockets affixed to the same pipes by means of indiarubber rings. I, therefore, saved the expense of having new pipes. I may add that, should a ring-joint prove defective, either at the time of fixing or afterwards, the evil can easily be remedied, without the necessity of emptying the apparatus of water, by simply ramming in against the ring a packing of yarn, or similar material, until it becomes water-tight, and then filling the remaining space with Portland or other cement. I have, however, found it rarely necessary to adopt such a course, and that only at the time of fixing, owing to a ring fitting improperly on account of its being too small or too large for the socket. It is desirable that the rings should possess substance sufficient only to allow them to enter the sockets with a moderate thrust; but, of the two evils, it is better to have them fit too easy than too tight. Should your correspondent decline to adopt the mode in question, I would then advise him to try Portland cement, which, on the score of economy, he would find preferable even to india-rubber rings, but not comparable to them as regards celerity in the operation of fixing. In durability and efficiency I have proved this cement to be equal to the rings; but my experience does not allow me to advocate either of the systems for making joints in close proximity to the fire heat. W. G.

It has been discovered by Minnesota farmers that 2 acres of Sunflowers will supply a family with fuel through a long winter The wood of the stalks and the oil of the seed, it is said, make roaring and cheerful fires.

COVENT GARDEN MARKET.

May 2nd.

Flowers.—The supply of these increases as the season advances. Even Lilium auratum, both in the shape of flowering plants in pots and cut blooms, has made its appearance; also zonal and show Pelargoniums, Fuchsias, herbaceous Calceolarias, Cinerarias, Heaths, Cytisus, Mignonette, Azaleas, Lily of the Valley, Callas, Ferns, Selaginellas, small Palms, Dracænas, and fine-foliaged and flowering Begonias, now constitute the bulk of plants in pots. Amongst cut flowers are Roses of different sorts, particularly Marèchal Niel, Pelargoniums, Camellias, Azaleas, Gardenias, Stephanotis, Pinks, Lily of the Valley, Orchids of different kinds, Forget-me-Nots, Nemophilas, and others. Hardy plants likewise occupy a prominent position; they consist of Pansies, Ranunculuses, Anemones, Polyanthuses, Cowslips, Oxlips, Primroses, Daisies, Aubrietias, Arabis, Wallflowers (single and double), and a few other things in flower, lifted with roots, and kept moist in boxes until sold. Sweet Williams, Canterbury Bells, Lupins, Southern-wood, Periwinkles, &c., although not in flower, are brought to market, and meet with a ready sale. Climbing plants, such as Virginian Creepers, Jasmines, Ivies, Cobæas, Lophospermums, Passifloras, &c., in pots, are also plentiful, and seem to be much sought after. Nasturtiums, Sweet Peas, and Tropæolum canariense are offered in their seedling pots, perhaps from two to four dozen plants being in each pot. In Fern roots, too, there is a large trade just now.

Fruit and Vegetables.—Large supplies of American Apples, consisting chiefly of Newtown Pippins, have just arrived, and meet with a ready sale. New Grapes and Strawberries are good and becoming more abundant, excellent supplies of them having arrived from Jersey. Pine-apples are in good demand and are rising in price. English grown Peaches are of fair quality, but as yet scarce. Cucumbers are plentiful and good. Green Gooseberries, fresh Capsicums, Green Peas, Beans, Kidney Beans, and salading are furnished in moderate quantities, and of other vegetables and Potatoes there are good samples and ample supplies.

Prices of Fruits.—Apples, per half sieve, 3s. to 5s.; Cobs, per lb., 2s. to 2s. 6d.; Grapes, hothouse, per lb., 10s. to 18s.; Lemons, per 100, 6s. to 10s.; Oranges, per 100, 6s. to 12s.; Peaches, per doz., 18s. to 36s.; Pears, kitchen, per doz., 1s. to 3s.; dessert, per doz., 6s. to 18s.; Pine-Apples, per lb., 8s. to 12s.; Strawberries, per oz., 9d. to 1s. 6d.; Walnuts, per bushel, 15s. to 30s.; ditto, per 100, 2s. to 2s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100 5s. to 10s.; French, 4s. to 10s.; Beans, Kidney, per 100, 1s. 6d. to 2s. 6d.; Beet, Red, per doz., 1s. to 3s.; Broccoli, per bundle, 9d. to 1s. 6d.; Cabbage, per doz., 1s. to 1s. 6d.; Carrots, per bunch, young, 1s. 6d., old do., 8d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 2s. 6d. to 4s.; Cucumbers, each, 6d. to 2s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 2d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 5s. to 8s.; pickling, per quart, 6d.; Parsley, per doz. bunches, 6s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 5s. to 8s.; Potatoes, per bushel, 5s. to 10s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Savoys, per doz., 2s. to 3s.; Scorzonera, per bundle, 1s.; Seakale, per basket, 1s. to 2s.; Shallots, per lb., 3d.; Spinach, per bushel, 3s. 6d. to 5s.; Turnips, old, per bunch, 3d. to 6d., young do. 2s.

ANSWERS TO CORRESPONDENTS.

Common Laurels (M. T. W.).—They strike readily from cuttings taken off, and put in in autumn.——Ground Vineries (a Subscriber).—We know of none better than those made by the firm you name.——Primroses (Ambleside).—An abnormal variety of the ordinary yellow Primrose, and when seen in perfection no doubt very pretty.——Conservatories (A. K.).—We know of no book on the subject worth consulting.——Names of Plants (Rocks) next week.——(G. B.)—1. Pulmonaria maculata; 2. Berberis Darwinii; 3. Prunus triloba; 4. Berberis dulcis; 5. Retinospora pisifera; 6. Pteris scaberula.——(Royston).—Opuntia microdasys, and Amelanchier Botryapium.——(E. S.) 1. Oxalis, sp. indeterminable; 2. Scilla amœna; 3. Ornithogalum umbellatum; 4. Anemone Pulsatilla; 5. Fritillaria Meleagris var.; 6. Leucojum æstivum; 7. Omphalodes verna; 8. Orobus vernus; 9. Muscari botryoides.—(Gardener).—1. Aspidium coriaceum; 2. Cyrtomium falcatum: 3. Lastrea glabella; 4, Athyrium Filix-Fœm. Smithii; 5. Pteris serrulata; 6. Pteris serrulata var. corymbosa.——Book on Greenhoue Plants (S. E.).—Williams on Stove and Greenhouse Plants, published by the Author.——The Snowflakes (P. R. S.)—All are hardy and worthy of a place in every garden.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

FLOWERS AND HEALTH.

It suited a poet once to pen the well-known line—"Die of a Rose in aromatic pain," and there have not been wanting plenty of alarmists as to the perils of sleeping in rooms where large quantities of particular kinds of flowers have been temporarily deposited; sometimes, no doubt, with good reason, for it has been proved by experience that certain individuals are affected seriously by certain odours, the odoriferous matter being not a mere invisible aura, but a substantial exhalation, capable of being taken up after the same manner as the gases produced by sundry chemical experiments. The Narcissus, the Wallflower, and several others, appear to have furnished definite cases of this nature. Similar charges have been brought, more or less justly, against certain trees, shrubs, and even herbaceous plants, invisible emanations from which are reputed to cause nausea, insensibility, and even death, the famous fable of the Upas having a fractional amount of truthful realisation. The Manchineel tree of the West Indies, and certain American species of Rhus are generally understood to be capable of thus vitiating and even poisoning the atmosphere that immediately envelopes them, though the effects are manifested only in persons who are predisposed to suffer from malaria. These statements rest, no doubt, upon a certain basis of fact, but more numerous observations, and greater precision in determining how much is *bonâ fide* cause, and how much is veritable effect, are still needed in order to a right apprehension of the degree to which plants can injure man seriously through his nostrils. Simple unpleasantness of odour is of course quite another thing, often a matter merely of fancy or education, and cannot be in any degree associated with deleterious qualities in the plant affording it, since we have noisome scents in some of the harmless Labiatæ, such as the Stachys sylvatica and the Ballota nigra, the very name of which last, facetiously derived from ballein, to "cast away," is intended to imply its unanimous rejection by respectable noses, or at all events by the average nose of civilised Europe, while, *per contra*, there are plants of vicious properties that afford scent truly delicious, as for example, the common Mezereon. With modern science to give us lessons, we find however, that the ill effects produced by the odours of one set of plants and flowers are balanced, perhaps quite overmatched, by the good effects of other sets. Most of us have heard of "ozone." It is one of those capital ingredients of the world that have existed from the beginning, but which have only of late years been actually recognised, and consists, in plain English, of highly electrified oxygen, the gas when so electrified acquiring specially good qualities in regard to the general health of mankind. Professor Montegazza, of Padua, states that certain plants and flowers, upon exposure to the rays of the sun, cause so large an increase in the quantity of ozone round about, as to be eminently conducive to a better condition of the atmosphere, of course with the understanding that there is proper ventilation, such as will carry off the excess of purely odorous matter that may arise from them. Among these ozone manufacturers of the botanical world are the Cherry Laurel (poisonous in its leaves and kernels); the Clove, Lavender, Mint, Fennel, the Lemon tree, and others; also the Narcissus, the Heliotrope, the Hyacinth, and Mignonette. Certain prepared perfumes, similarly exposed to the sunshine, add further to the atmospheric stock of ozone, the well-known Eau-de-Cologne for instance, oil of bergamot, extract of millefleurs, essence of Lavender, and some of the aromatic tinctures. The oxidation of certain essential oils obtained from plants and flowers, such as the oils of nutmeg, aniseed, Thyme, and peppermint, is likewise indicated by the professor as a source of ozone, though the supply of this pleasant aërial condiment is in the case of these less considerable. Dr. Mantegazza recommends accordingly the large and sedulous cultivation of ozone-producing plants in all districts and localities where the atmosphere is liable to be corrupted, marshy places in particular, in which last, according to Dr. Cornelius Fox, in his recent comprehensive work upon ozone, it is impossible for any better sanitary agent to be introduced than the common Sunflower. This plant, happily able to make itself quite at home in the poorest cottage backyard, has been shown not only to purify the atmosphere of marshy places, removing a very decided amount of the miasmata ordinarily there engendered, but to confer the positive benefit of augmenting the quantity of ozone. People are recommended often to the seaside, or to special marine watering-places, for the sake of their reputed wealth in ozone. Should we not move a vote of thanks to the man who has shown us how to arrange for supplies upon our own premises?

In past ages there appear to have been instances of a sort of instinctive resort to certain plants as disinfectants. Herodian relates that during a plague in Italy, in the second century, strangers crowding to Rome were directed by the physicians to retreat to Laurentum (now San Lorenzo), a place so called from the abundance of Laurus nobilis, or Sweet Bay Tree, which then grew there, and by inhaling the odour of which they would in a certain measure be guarded from infection. And long before the time alluded to, the disciples of Empedocles had been accustomed to plant aromatic and balsamic herbs in the neighbourhood of their dwellings, in the confident belief that by so doing they were providing means of defence against fevers, &c. To this day we have the name of "Feverfew" as the appellation of one of the strongest-scented Compositæ, with traditions of its abounding febrifugal powers.

So that if we are wise we shall imitate the citizens of Laurentum, and promote the growth of Bay trees wherever the soil and climate will allow them to flourish. If the experiment should fail as regards miasmata, we shall at all events be so much the richer as to a fragrant evergreen; and if we are wise, we shall further encourage and help forward the diffusion of odour-yielding flowers, such as yield this excellent ozone, in the gardens, &c., of towns and their suburbs, promoting the healthy qualities of the atmosphere after the most beautiful and picturesque of methods. Mignonette, Thyme, Lavender, Sunflowers, will grow almost anywhere, operating their quiet but solid usefulness in a way that is least of all expected. The purification of the atmosphere from a portion of its carbonic acid gas goes on all the same, and uninterruptedly; the ozone manufacture is a distinct and independent performance, and belongs to the flowers alone, just as the former pertains to the green foliage only. The more that chemistry discovers in relation to the ozoniparous properties of flowers, the more valuable will flowers become to reflective minds, and to all who are satisfied, like ourselves, that simple beauty is invariably the index to some large and admirable fact of the practical kind; and thus it will appear in the end that the florists and others who devote themselves to the teaching of æsthetics combine therewith, unconsciously, the benevolent functions of the sanitarian. Leo Grindon.

The value of Laportea pustulata as a textile plant is now occupying much attention in Germany. This plant, which is known in N. America as the Wood Nettle, was discovered some years since by M. Roezl on the Alleghany Mountains at an altitude of more than 5,000 feet above the sea level. Some living specimens which he brought home were disposed of to the Prussian Minister of Agriculture, who was desirous of ascertaining the value of the plant under cultivation. The results, so far, appear to be favourable. Being a perennial, the Laportea does not require to be sown every year, and, in this respect, has some advantage over Hemp and Flax; besides which, it is far less troublesome and less expensive than Hemp in the preparation of its fibres. In the wild state it grows from 2 to 3 feet high; but, as grown at Berlin, it has already reached a higher stature, which it is probable will be still more extended by careful cultivation in suitable soil. The experiments which—as yet to a limited extent only—have been made as to the quality of the fibre, tend to the conclusion that it will form a valuable addition to our textile materials. We may add that the plant grows rapidly, and is easily multiplied by division of the stools, or by root-cuttings.

NOTES OF THE WEEK.

—— The thirtieth Anniversary Dinner in aid of the funds of the Gardeners' Royal Benevolent Institution is announced to take place on Wednesday, the 2nd July, when the Right Hon. Lord Henry Gordon Lennox, M.P., will preside.

—— A fine late white Broccoli, named Northampton Hero, sent to us by Messrs. Watts & Son, of Northampton, promises to be an acquisition. Its heads are large, white, and compact, and their flavour excellent.

—— On Tuesday afternoon their Majesties the King and Queen of the Belgians honoured the establishment of the Messrs. Veitch at Chelsea with a visit. They were conducted through the various departments by Mr. H. J. Veitch, and were pleased to express themselves much delighted with the many attractions of this nursery, more particularly with the specimen Azaleas, pot Roses, and Orchids, now in great beauty.

—— To the wonderful excellence of imported Newtown Pippin Apples, and to their abundance in our markets this year, we have several times alluded. Earlier in the season they could only be had at our best fruit shops at from threepence to fourpence apiece; but now London hawkers are selling them in the streets at a penny apiece. Though a little deteriorated in flavour, through long keeping, everybody has therefore now an opportunity of tasting this fine American Apple.

—— At the meeting of the Royal Horticultural Society on Wednesday last, Mr. C. Turner, of Slough, showed some of the finest specimens of pot-grown Roses ever yet exhibited. As a rule they measured about 6 feet in diameter and as much in height, each plant being furnished on an average with at least a hundred expanded flowers. The blooms, too, were large, excellent in form, and bright in colour; the foliage abundant, and fully as fine as ever we have seen it on Roses grown in pots.

—— We have received from Mr. Horley, Toddington, Beds, a portable frame, which seems well adapted for the growth of salads, or for protecting Scarlet Runners and things of a similar character, from frost. It is made in lengths of 4 and 6 feet. It is span-roofed; the glass, which is moveable, can be slipped readily in and out at pleasure, and altogether it looks as if it would prove extremely useful as a protector and promoter of growth in early crops.

—— A nice plant of the comparatively new Veronica Hulkeana was shown at South Kensington on Wednesday last by Mr. Macintosh, of Hammersmith. It is a New Zealand species, which, growing as it does on mountains at considerable elevations, may possibly prove hardy in some of the warmest parts of England. It forms a little small-leaved bush, from 2 to 3 feet in height, and produces spikes of pretty light mauve-coloured flowers from the middle of April to the end of June. A plant of it stood out of doors uninjured during the last two winters at Hammersmith.

—— A paper by Mr. Howard, read to the Linnæan Society the other night on the Cinchonas, though dealing with questions of variation and "sport," interesting principally to botanists, contained this interesting fact: Plants raised from seed from the same pod have been known to produce very different kinds of bark, some yielding excellent quinine in large quantity, others giving bark absolutely worthless for medicinal purposes. No explanation can be offered, but the cultivators of Cinchona can avoid the chance of this failure by always propagating by cuttings, and not trusting to seed. With the possibility of this valuable medicine becoming scarce this is important.

—— Col. Wilder stated, in a letter to the Massachusetts Horticultural Society, that the Rhododendron and Azalea, distinct genera, had been hybridised, but that no one had ever succeeded in making a hybrid between the Apple and the Pear, or between the Raspberry and the Blackberry, which belong respectively to the same genera. It was doubted for a time that hybrids could be obtained between the Vitis vinifera and V. labrusca, but several cultivators have settled the question and produced them. Col. Wilder said that his earliest experience in hybridising was in the floral kingdom, in crossing species and varieties of the Camellia. He discovered that, to produce double flowers, it was important that the pollen be taken from a *petaloid anther*, that is, an anther borne on a small petal (the filament being flattened out in its first remove from its original form), and that this was still better if from a double flower. He also performed interesting experiments with the Lily; the first was with the red Japan and the Tiger Lily. Seedlings were produced with different shades, from delicate rose to dark crimson. He also found that pollen preserved its fertilising power a long time. In one instance, a camel's hair pencil, which had not been used for several days, was found with pollen on it. This was applied to the stigma of a Lily, and produced fertilisation. In another instance, he fertilised with pollen carried a long time in his pocket. The science of hybridisation, says Col. Wilder, is yet in its infancy. To use the language of Dr. Lindley, "We have but stepped over the borders, and the whole field of hybridising lies widely spread before us; its boundaries are lost in the horizon, and we shall find them still receding as we advance."

—— The Fairfield Orchids are, we understand, to be sold by auction; the sale is to commence on the 12th inst., and it is expected to last some seven or eight days.

—— Dr. Kellogg, the discoverer of Lilium Bloomerianum, states that it is the most magnificent Lily of the Pacific coast. Its flowers are large, nodding, of a beautiful orange hue, and studded with rich dark spots. It grows from 6 to 10 feet high, and under high culture four to six stems are produced from a single bulb.

—— The Kibble Art Palace and Conservatory, erected by Messrs. Boyd in the Botanic Garden, Glasgow, was opened the other evening for private view, prior to its public opening, which is expected to take place soon. Fifteen hundred visitors availed themselves of the opportunity to inspect this really beautiful winter garden.

—— Some fine new Grapes were shown at South Kensington the other day, from the Royal Gardens at Frogmore. They consisted of several clusters of Black Hamburgh and of Buckland Sweetwater, the berries of both of which were large, plump, finely ripened, and covered with a beautiful bloom. They were the produce of one-year-old pot Vines.

—— Few succulents are handsomer, when seen *en masse*, than the two orange-flowered Mesembryanthemums aurantiacum and aureum, specimens of both of which have been brought under our notice by Mr. Thomson, of Penge. Mr. Thomson, we understand, has some thousands of these plants now in full bloom, and when seen on a sunny day, the effect produced by them is striking in the extreme. They require only the protection of a frame in winter, and, coming into bloom as they do early in the season, they make suitable plants for window decoration.

—— We are glad to observe that the skill in spring gardening shown by Mr. Roger when gardener at Berry Hill is now beginning to be used with good effect in the adornment of Battersea Park. A beginning has been made near the west lodge, and that part of the park now presents an aspect much superior to what it used to have when the beds were left empty except in summer. We are glad of this beginning, as we see no reason why a fine display of spring flowers might not be made in the light soil of Battersea Park as well as anywhere else. Spring flowers, with the exception of the commoner kinds of bulbs, have hitherto been much neglected in our London parks.

—— From some experiments made in Berlin, with the view of determining what damage is really done to the roots of trees and shrubs by coal-gas escaping from pipes and permeating the soil, it has been found that even so small a quantity of gas as 25 cubic feet per day, distributed through 576 cubic feet of earth, rapidly killed the rootlets of all trees with which it came in contact.

—— As an instance of the rapidity of the growth of trees in tropical regions, the *Panama Star and Herald* states that two years ago the Aspinwall Hotel at Panama was burnt down, and that the ground for some distance round the building was completely cleared of vegetation by the fire. On this space there has already sprung up a luxuriant growth of trees, some of which are no less than 32 feet high. These are Cecropias or Trumpet trees, whose branches, growing at right angles with the trunk, have reached the ruined walls of the hotel, and are now crowding through the doorways and the higher windows in such numbers and with such force of growth that it is expected the walls will soon be completely levelled by the pressure.

—— George Sand's eloquent protest against the mutilation of Fontainebleau Forest seems to have borne some fruit, for we learn that a committee has been formed in Paris for the purpose of protecting it, not only from the woodman, but from the manufactories which are beginning to encroach upon its borders. It appears that the timber which is marked for felling will yield but an insignificant price; still, though the value of certain Beeches and Pine trees may be small from a commercial point of view, they are at least deserving of respect as artistic studies, and because they have been illustrated by Diaz and Théodore Rousseau. It is asserted that some of the Oaks are more than 400 years old, and their age should protect them from destruction, if only because, when felled, they would be comparatively worthless. The Forest of Fontainebleau was, until the Revolution, known as the Forêt de la Bière; but it was converted into a Royal domain by a decree of Henri II. in 1566. It is to be regretted that the measures which he took to preserve it from desecration have not been adhered to in these latter days; and it may be hoped that the committee will succeed in getting the Administration of the Fine Arts, within whose province the woods and forests lie, to preserve it from further injury.

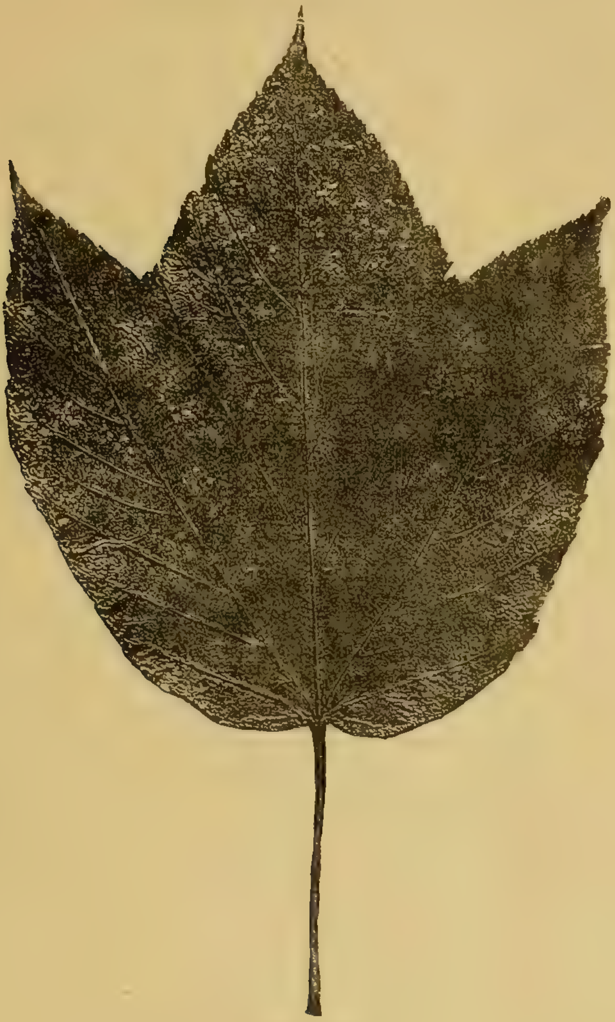
THE ARBORETUM.

HARDY TREES AND SHRUBS.

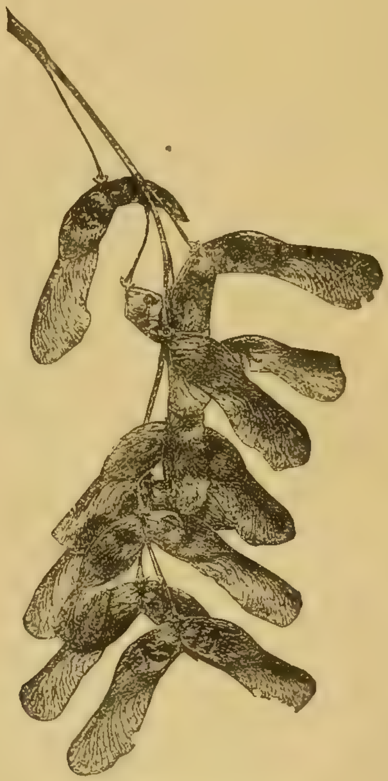
BY GEORGE GORDON, A.L.S.

THE STRIPED-BARKED MAPLE (ACER STRIATUM).

This forms a somewhat erect-growing deciduous tree, which attains a height of from 15 to 20 feet, and has a somewhat open head, irregular in outline, and the stem and branches covered with smooth green bark, elegantly marked longitudinally with white stripes. It is a native of North America, where it may be found anywhere between Canada and Georgia, and thrives best in a rather moist situation. It was first introduced in 1755. Its shoots are long and stout, and the buds and leaves when they first begin to expand, which is very early in the season, are of a rose colour. The leaves are large, thick in texture, three-lobed, cordate at the base, finely and acutely toothed on the edges, quite smooth on both surfaces, and set on rather long footstalks; they are deep glossy green above, and, just before they fall in the autumn, turn to a light chestnut, or yellowish-brown. The lobes are rather angular, not very deep, and very acutely pointed; the flowers are of a greenish-yellow, and are produced in May, in long, pendulous, simple, terminal racemes; the keys or fruit are smooth, bright green when young, and brown when ripe, with the wing rather diverging, and the carpels remarkable for having a hollow depression on one side. Owing to the beauty of its bark, and its fine large leaves, this Maple deserves a place in every pleasure ground. The synonymes are Acer canadense and Pennsylvanicum, and the local names, Moose Wood and Snake-barked Maple. The length of a full-sized leaf is 10 inches, including the footstalk, which is from 2½ to 3 inches long, and the breadth from 5½ to 6 inches.



Acer striatum.



Fruit or Keys of Acer striatum.

EFFECTIVE GROUPING OF TREES IN SPRING.

A background of Scotch Firs, dark, dense, and impenetrable, pincushioned here and there with tall wild Cherries, Geans, and Service trees, the white buds and white downy leaves of the latter looking like bunches of flowers. In front, groups of Crabs, Apples, and Pears, with flowers ranging from the most brilliant pink to the purest white. Groups of Almonds and Peaches are fitted in between or carried in lines of beauty through the pinks and whites. A little further on the Laburnum is found bursting its hanging racemes of gold, while rising up to meet these are Lilacs showing their bunches of blossoms and tender leaves. These again rest on a cushion of fine-foliaged Aucubas, and the ground-line is reached through a floral band of early Rhododendrons and Heaths. Surely a spring scene such as this might be enjoyed in every garden, were foresight and judgment allowed to preside at the planting of the grounds. But the object of planting is mostly to shut out something as rapidly as possible—an ugly object, the wind, the view of some one else's property—and hence planting is too often done hurriedly and with the one object of forming a blind or screen. But if blinds or screens must be had, why not, at least, try to render them beautiful? In olden times no labour was thought too great by the daughters of the wealthy to render fire-screens, curtains, tapestries, &c., exquisitely beautiful. We might with much advantage copy the example of the ladies of the olden times in rendering our garden screens, that is, plantations and shrubbery belts, as beautiful as possible. Every year adds to our materials, and we only lack taste and skill to make the most and best of them. Almost every tree and shrub may have its beauty increased by its accompaniments in shape, colour, size, style, and season. It is, therefore, high time that at least as much (if not more) care were exercised in the arrangement of shrubs and trees for effect as is expended in the arrangement of flowers. D. T. Fish.

The Deciduous Cypress.—I was very much pleased to see your capital illustration of the fine specimen of this at Syon, and trust it may serve to remind many of the high value of the tree. Apart from those remarkable root-knobs which, as shown in your engraving, give the tree quite a distinct character, and impart much interest to it, its value in the garden-landscape is priceless. Nothing equals the soft tender green of its summer dress, and in winter, it is when matured, one of the most distinct and striking of deciduous trees. In days when people are busy planting scores of expensive Conifers, the value of which for this country is as yet unproven, your picture of one of the noble deciduous Cypresses at Syon can hardly fail to do good, by calling attention to a tree of tried excellence and great beauty.—Arbor.

The Birch as a Pleasure Ground Tree.—It seems surprising that the Birch, which is sometimes called "The Lady of the Wood," is so seldom admitted into the garden and pleasure ground. In habit, general style, beauty of stem, colour, and form of leaf, what tree is more beautiful or pleasant than the Birch? It looks well singly, or in groups, or associated with almost any other trees. Against purple-headed Limes the green foliage of the Birch looks soft and rich. Standing up among Arbutuses, what a contrast of habit and of colour is produced! Birch trees also look grand towering up with clear stems far above the heads of glossy Laurels or Hollies, or glowing Rhododendrons. Indeed, everywhere they have a graceful, dressy appearance; and, unlike so many other trees, their roots prey but little upon those of their neighbours. And yet, somehow, Birches are comparatively little used for ornamental purposes. There are a good many varieties of the white, paper, and other Birches; but perhaps the common white, the cut-leaved, the variegated, the weeping or pendulous, the broad-leaved and hairy-twigged paper, and the Poplar-leaved are as interesting as any. All the Birches are, however, useful, and almost all shrubberies and plantations would be improved by their presence.—T.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Edwardsia grandiflora.—What a noble wall shrub this forms, with its large golden pea-flowers! It is in full beauty in May, and on sunny walls in southern England it grows and blossoms freely.—W.

The Dwarf Almond.—I cannot help recommending this to your readers, it is so dwarf and bright in early May, looking in my border like a slender-stemmed and elegant herbaceous plant, and full of gay flowers.—W.

Piptanthus nepalensis.—This well-known plant is a capital subject with which to cover walls, as has been proved often in mild parts of the country. It is, however, hardier than is generally supposed, as a portion of wall at the Heatherside Nurseries is now covered with its yellow blossoms.—C.

Exochorda grandiflora.—What a lovely wall shrub this makes! A specimen on the terrace wall at Linton Park, is now (May 2) adorned with strings of white pearl-like buds and beautiful pure white flowers. It is one of the fairest flowers of early summer, and ought to be planted extensively against houses and on walls.—R.

Leptospermum lanigerum.—At Heatherside the other day we were pleased to see the lovely white flowers of this New Holland shrub opening as bravely as those of our hardy spring-flowering trees. In early summer it becomes quite white with blossom, and it continues to bloom all the year round. It is quite hardy, and deserves a place in every collection of shrubs.

Wistaria (Glycine) sinensis.—This looks well on the roof of a greenhouse, or on an ornamental trellis in a temperate conservatory. In such positions it is now producing beautiful racemes of lilac flowers in abundance, accompanied by foliage of the freshest green. The blossoms, too, are deliciously fragrant. There used to be a noble specimen of this best of wall plants in the arboretum at Chiswick. Is it destroyed? or has it escaped destruction, though banished from the garden which it graced so long?—B.

Diseased Wellingtonias.—I have several Wellingtonias in my garden, which were planted some seven or eight years ago. This last year they have all turned a rusty brown, and have got to look thin, dried-up, and withered, as if scorched—the soil is a stiff sandy clay. Can any one furnish me with a remedy? Does smoke, for I live in the heart of a manufacturing district in Yorkshire, have any effect on them. All other shrubs in the garden have thriven well.—G. R. G.——[All kinds of Conifers dislike smoke, from the ill effects of which your Wellingtonias are doubtless suffering].

THE FRUIT GARDEN.

PEARS THAT SUCCEED ON THE QUINCE.

BY JOHN SCOTT.

The following is a list of most of the first-class Pears that grow very freely upon the Quince stock, and that will continue for many years to thrive and bear good crops of fine fruit when grown in that way. I have scrupulously given those only that are of first-rate quality, and which luxuriate upon the Quince; at least they do so in my soil, which is a sandy loam, intermixed with a portion of gravel, and resting upon a subsoil of sand, or rather sandy loam, and which becomes light sand as we descend, interspersed or rather traversed by horizontal layers of rock to a great depth. Our water-springs are from 10 to 15 feet below the surface, and are generally found when the first layer or bed of rock is perforated. In fact we never know what it is to be too wet or too dry. In such a soil as this, most fruit trees grow healthily and freely, although the fruit produced is not of the largest size. To get size we should require more clay. A peculiarity of this locality is the absence of scale and other tree insects, especially American blight or mealy bug. This last will not live upon our orchard trees, and although it is often imported into my collection, it never remains with us, and when we receive trees affected with it we take no notice of it, but plant them amongst the rest, being certain that it will not make any progress, but die off; however in very warm seasons it will put in an appearance upon old gnarled trees, but in ordinary seasons it entirely disappears. Lichen and Moss, too, make no head here, unless a tree is unhealthy, or planted near a stream, or shaded from the free action of the air. I have long tried to divine the cause of our exemption from mealy bug and lichen, and have formed the opinion that we are favoured by the south-western gales, that carry the saline vapour from the sea up to us. We are only 14 miles in a direct line from it, and after a storm the saline deposit is distinctly visible upon our windows. Two or three weeks ago I gave you a list of those sorts of good Pears that require to be double-grafted, and I now furnish the names of those that grow most freely. Between these two classes there is a numerous class that grow well, and bear well, and many of which are as fine as those enumerated below, so it may be taken for granted that all the first-class sorts, not named in either of the two lists given, belong to the section of medium growers. Oberdieck, the celebrated German pomologist, says that Pears, or at least most of the varieties, do best upon moist soil. This is perfectly true so far as Pears worked upon the Quince are concerned, but it must be taken with a qualification as regards Pears worked upon Pear-stocks, for if the soil is too moist, the trees will make too much strong watery wood, and become consequently barren, and subject to be frost-bitten, which produces canker and decay. Therefore all naturally moist soils should at least be well drained before trees on the Pear-stock are planted, and, whenever they show symptoms of over-growth, root-pruning should be resorted to; for, unless we can get well-ripened wood, we need hardly look for fruit. This is well borne out by Pears worked upon the Quince. On it they make short, well-ripened wood, and, as a matter of course, are annually loaded with flowers, and would also be so with fruit, if it were not for our untoward months of April and May, which, for several years past, have almost destroyed all our Pear crops, and many trees likewise. I am now writing (April 24th) within ten yards of a good registering thermometer, which is falling fast towards the freezing point. It is now ten o'clock p.m., and I expect, from the rapidly-falling glass and a bitter north-east wind, that we shall have 6° or 8° of frost by seven o'clock to-morrow; then there will be lamentation and mourning in the gardens, which are to-day, where Pears are much grown, in gorgeous floral beauty. I have added to the most luxuriant growers in the list an *, to enable any one to choose the strongest sorts, when their soils are too light to grow the more shy kinds; and I would advise all who wish to have fine Pears to grow them upon the Quince stock, selecting the sorts that are suitable for their soils, and, where the soil will not grow them well upon the Quince, then grow them double-grafted, and plant them 4 feet apart, either along the edges of the walks or in a square by themselves; 100 trees would form a square 40 feet by 40 feet, and might easily be covered in April and May with thin bunting, and thus ensure a good crop :—

- Abbé Pérez
- Adam's
- Adelaide de Reeves
- Adéle Lancelot
- Adolphe Cachet
- Aimé Ogereau
- Alexandre Lambré
- Alexandrina Bivort
  - Douillard
- Alphonse Karr
- Amande Double
- Amandine de Rouen
- Amélie Leclerc
- America
- Amiral Cécile
- Ananas de Courtrai
- *André Desportes
- Angélique Leclerc
- *Angleterre Nain
- Archiduc Charles
- Arlequin Musqué
- Arthur Bivort
- Auguste Jurie
  - Royer
- Barbe Nelis
- Baronne de Melo
- Barry
- Basiner
- Bavay
- Beau-Présent d'Artois
- Belle et Bonne
  - de Figuier
  - Fleurusienne
  - de Flushing
  - de Jarnac
  - de Malines
  - *Rouefinaise
- Bergamote Autumn
  - striped
  - Bufo
  - Esperen
  - de Heimbourg
  - de Jodoigne
  - Leseble
  - de Millepieds
  - Niot
  - Reinette
  - Sauvage
- Berryais (le)
- Beurré Allard
  - *d'Amanlis
    - Panaché
  - Anserœuil
  - *de l'Assomption
  - Bachelier
  - Beauchamp
  - *Brown
  - de Bruxelles
  - Burnicq
  - Caty
  - Chatenay
  - Colmar
  - Curtet
  - Defays
  - de Lannoy
  - Diel
  - Doré de Bilbao
  - Dumont
  - Dumortier
  - Durand
  - Duval
  - Fidéline
  - de Ghélin
  - Giffard
  - Hardy
  - Jean Van Geert
  - de Jonghe
  - Kirtland
  - Langelier
  - Luizet
  - Menand
  - Millet
  - Moiré
  - Mondell's
  - Naghan
  - Oswego
  - Oudinot
  - Obozinski
  - Perpetuel
  - Philippe Delfosse
  - St. Marc
  - St. Nicolas
  - Six
  - Spae
  - Sterckmans
  - Superfin
  - Wetteren
- Bezi de Montigny
  - de la Motte
- Bezi Goubalt
  - Mai
- Blanquet á longue queue
  - le Petit
- Bois Napoléon
- Bonne d' Anjou
  - *d' Ezée
  - de Malines
  - de Soulers
- Bonneserre de St. Denis
- Braconot
- Brandywine
- Breuil Père (Du)
- Briffaut
- Broom Park
- Brun (le)
- Buffum
- Cadet de Vaux
- Calloit Rosat
- Calebasse Oberdieck
  - Tougard
- Capsheaf
- Castelline
- Catherine Lambré
- Chaigneau
- Charles Basiner
  - Bivort
- Chasseurs (Des)
- Chevriers de Stuttgardt
- Choisnard
- *Citron des Carmes à longue queue
- Clément Bivort
- Collins
- *Colmar
  - d'Alost
  - d'Arenberg
  - Charni
  - d'Eté
  - de Mars
  - Navez
- Columbia
- Comte de Paris
- Comtesse d'Alost
- Conseiller Ranwez
- Courte Queue d' Automne
- Crassane
- Cross
- David d' Angers
- Dearborn's Seedling
- Délices de Froyennes
  - d' Hardenpont d'Angers
  - *de Jodoigne
- *Désiré Cornélis
- Dix
- *Dr. Capron
  - Koch
  - Meniére
  - Nelis
  - Pigeaux
  - *Trousseau
- Downton
- Doyen Dillen
- Doyenné (white)
  - d'Alençon
  - du Cercle
  - du Comice
  - d'Eté
  - Defays
  - Flon Ainé
  - Goubault
  - de la Grifferaye
  - Gris
  - Robin
  - Sentelet
  - Sterckmans
- Duc d'Aumale
  - Alfred de Cruy
  - *de Nemours
- Duchesse d'Angoulême
  - Panachée
  - Pitmaston
  - Anne
  - de Berry d'été
  - de Bordeaux
  - de Brabant
  - *de Brissac
  - Hélène d'Orleans
  - de Mouchy
- Duhamel du Monceau
- *Dunmore
- Edouard Morren
- *Eléonie Bouvier
- Emilie Bivort
- *Enfant Prodigue
- Esperine
- Eugène Appert
  - Gerard
  - des Nouhes
- Figue Grosse
- Fondante Agréable
- Fondante des Bois
  - de Behorel
  - de Charneu
  - de Cuerne
  - de la Maitre-Ecole
  - de Malines
  - de la Roche
- Forelle
- Fortunée Boisselot
- Frederic de Wurtemberg
- Fulton
- *Général de Beauchamp
  - De Lourmel
  - Dutilleul
  - Duvivier
  - Lamoriciére
  - *Tottleben
- Gilam
- Glou Morceau
- Graciole de Jersey
- *Graslin
- Grégoire Bordillon
- Grosse Louise
  - Poire d'Amande
- Hammond
- *Hebé
- Hélene Grégoire
- *Henri Bivort
  - *Desportes
  - Le Docte
  - Van Houtte
- Henrietta
- Henriette Bouvier
- Hovey of Leroy
  - of Dana
- Howell
- Hubert Grégoire
- Jacques Chamaret
- Jalousie de Fontenoy
- Jammette
- Jargonelle English
- Jean Baptiste
- Jewess
- Jules Blaise
- Lahérard
- *Leon Rey
- Leopold 1st
- Lesbre
- Levard
- *Lewis
- Lieutenant Poidevin
- Loriol de Barny
- Louis Vilmorin
- Lucie Audusson
- Madame Alfred Conin
  - *André Leroy
  - Appert
  - Ducar
  - Elisa
  - *Favre
  - *Henri Desportes
  - Loriol de Barney
  - Treyve
  - Vazille
- *Maréchal de Cour
  - Dillen
  - *Vaillant
- Marguerite d' Anjou
- Marie-Anne de Nancy
  - Benoist
  - *Guisse
  - *Parent
- Marshal Wilder
- *Mary
- Mas (du)
- Merlet
- Miller
- Millot de Nancy
- Mouchallard
- Monseigneur Affre
- Morel
- Musquée d'Esperen
- Napoléon Savinien
  - *3rd
- Ne Plus Meuris
- *Nouveau Poiteau
- Octave Lachambre
- *Oken
- *Olivier de Serres
- Omer Pacha
- Orange Mandarine
- Osband's Summer
- Pain et Vin
- Passe-Colmar
- Paternoster
- *Payen
- Payenche
- Peach
- Pertusati
- Petit-Oin
- Petite Marguerite
  - Victorine
- Philadelphia
- Plantagenet
- Pierre Pépin
- Poete Béranger
- Poiteau (of the French)
- Président Métivier
  - D'Osmonville
  - Parigot
  - Royer
- Prince Imperial de France
  - Napoleon
- Princesse Marianne
  - of Orange
- Priou
- Professeur Barral
- Puebla
- Quintinye (la)
- Queen of August
- Ronde du Bosquet
- Robert Hogg
- Rousselet d'Août
  - de Reims
  - St. Vincent
- Rousselon
- Royale d'Hiver
  - Vendée
- Saint André
  - Germain d'Hiver
  - ,, du Tilloy
  - Ghislain
- Sainte Thérèse
- Savoureuse
- Senateur Mosselman
  - Vaisse
- Serrurier
- Sœur Gregoire
- Soldat Laboureur
- Sorlus
- Souvenir Favre
  - de Gaëte
  - de la Reine des Belges
- Sucrée Blanche
- Sucrée de Montluçon
  - de Zurich
- Surpasse Virgalieu
- Théodore Van Mons
- Thérèse Appert
- Thompson
- Tigrée de Janvier
- Tongres (de)
- Triomphe de Jodoigne
- Tuerlinckx
- Urbanistes (des)
- Uwchlan
- Vernusson
- Verte Longue d' Automne
  - de la Sarthe
- Vice President Delehaye
- Vicomte de Spoelberg
- Victoria (Huyshe's)
- Vigne
- Villeno de St. Florent
- Vin (des Anglais)
- Vineuse
- 25th Anniversaire de Leopold 1st
- *Virgouleuse
- Walter Scott
- Westrumb
- William's (Bonchrétien)
  - *d'Hiver
- Zéphirin Grégoire
  - Louis

STRAWBERRIES IN POTS.

I may not be able to say much that is new on this subject, but the following remarks are the results of my own practice, which has been very successful. In order to obtain fruit very early in the season, arrangements must be made to secure the earliest runners that are produced, so that the crowns may be ripened early in autumn. Runners that are taken late will, if forced early, produce a large percentage of "blind" plants. One gardener, who forces a large number early in the season, told me that eighty per cent. of his plants failed to throw up flowers this year, a circumstance no doubt attributable to the above cause and to the unfavourable season last year. My plants of Black Prince, which had ripe fruit in March, did not fail to the extent of five per cent.; and Keens' Seedling, which succeeded them early in April, was even more satisfactory. As soon as the runners are ready for layering, a number of 60-sized pots should be filled with soil which has been previously prepared. The best compost for them is four parts of turfy loam and one part of short stable-manure, such as is usually prepared for Mushroom beds. In preparing the pots, no drainage is required; a little of the fibry portion of the loam is placed in the bottom, and over it a pinch of soot, to prevent the ingress of worms; the compost is then pressed in firmly. One matter, though a small one, is worthy of note, and that is, not to place the pots singly on the beds, but in rows closely together, for the convenience of watering them. The runners should be kept in their place by a small peg. In two weeks the plants will be established, when they may be removed from the parent plant. The pots should be placed on a bed of ashes, or some hard bottom, and an airy position, where they are fully exposed to the sun, should be selected. In two or three weeks the small pots will be well filled with roots, and the plants should be potted into the fruiting pots; 5-inch will be large enough for the earliest, and 6-inch for the late-fruiting plants. In potting, the compost should be well rammed in with a wooden rammer, as firm potting is essential to successful culture. The depth of planting is also very important. The plants should not be placed deeper in the fruiting pots than they were in the small ones. It is also very necessary to choose a suitable position for the plants after they are potted. The plants should not be crowded together, and they should have an open position, fully exposed to the sun, with a little shelter, if possible, from the north and east. I generally place them on one of the kitchen garden quarters which has been cleared of a crop of early vegetables; the space is made level, and as it is not convenient in this case to cover the ground with ashes or some similar material, to prevent the worms from coming up, I place bricks flat on the ground, and on these the pots stand. Not only does this effectually prevent the worms from getting into the pots, but the air circulates more freely underneath than when the pots are placed on the level ground. When worms get into the pots, they do much damage by loosening the mould, and also by stopping the drainage. They may be destroyed by watering the plants with clear lime-water, or the plants may be turned out of the pots, and the worms picked from the ball, returning it back intact into the pot again. During the summer and early autumn months, the plants will grow very rapidly. All the attention they require is to pinch off the runners they produce, and supply them plentifully with water. The leaves are sometimes attacked by a small green maggot, which must be destroyed by hand-picking. Red spider is the most troublesome pest to the Strawberry grower. In hot, dry seasons, the plants are ofttimes attacked before they are potted; if so, an opportunity will be afforded to dip the plants in some solution destructive to this pest while they are being potted. Should it appear afterwards, syringe the plants well with clear water until the insects are dislodged. The plants must not be left out of doors too late in the autumn, as, should the pots get saturated with wet, the roots will be injured. There are various ways of disposing of them at this season of the year; but nothing answers better than to stand the plants on shelves near the glass, in pits or houses, which can be heated in the event of severe frosts setting in. Cold frames answer very well, but the pots must be plunged, to prevent the frosts from getting to the roots. Another way is to lay the pots on the ground out of doors; they are laid down in a double row, close to each other, bottom to bottom; all the interstices are filled with ashes, another double row is then placed above them in a similar position, and so on with other pots until a stack six pots deep is formed. They do very well in this way, and do not require watering, as the pots absorb moisture from the rain that falls on the ashes. The plants, after being stored for the winter, will require but little attention until they are introduced into the forcing house. The time when they are brought in must be regulated by the time the fruit is required. I have picked Black Prince in February, and to obtain them so early as this, they must be started in a gentle heat about the middle of November—45° at night will be a sufficiently high temperature to begin with, raising it to 50° after the first fortnight. Whether the plants are started at that time in a house specially provided for them or in an early vinery they must be kept close to the glass and fully exposed to the sun. By the time the plants are in bloom the night temperature of the house should be maintained not lower than 55°. A moderately dry atmosphere, with a constant circulation of air, will cause them to set freely. A camel-hair brush should also be passed over the blooms; it can be done very quickly, and is necessary so early in the season, when the sun, if it should appear at all, has but little effect. The fruit, as soon as it is set, must also be thinned, only those that have set well being allowed to remain. I may say that the only Strawberry I have found to succeed with very early forcing is Black Prince. Many others have been tried, but none are so sure to throw up trusses or to set the fruit freely afterwards. Keens' Seedling is the best second early, followed by President and British Queen, to come in before the early sorts from the open ground. In many soils British Queen is uncertain, but with the method of cultivation which will be explained in a future paper it seldom fails to bear a good crop of fruit. The essentials to obtain good fruit from early forced Strawberries are a moderately dry atmosphere and a free circulation of air over the plants. A night temperature of 60° suits them well, and the fruit should be supported above the leaves with short sticks. Nothing answers better for this purpose than sprays taken from old birch-brooms, cut to the proper length, with the small side branches cut back, leaving clefts, over which the fruit hangs. Three or four of these placed in a pot will be sufficient. J. D.

FRUIT PROSPECTS ON WALLS.

These are, upon the whole, good. Cherries and Plums promise a profusion of fruit; and, unless the snow-storms of April 23 and 24 bring too much frost after them, it is to be hoped that these most useful fruits will be abundant this season. It is almost too early to write definitely of the other three great wall crops—Peaches, Nectarines, and Apricots; but not too soon to note peculiarities and imperfections of their blooming. The chief of these are piecemeal opening and a deficiency in the size, colour, and number of the blossoms—Apricots especially have bloomed more scantily than I ever remember to have seen them, and this has been rendered more conspicuous by the flowers opening only by a few scores at a time. It is difficult to account for this mode of blossoming. The wet season of last year may readily explain their scanty crop of bloom; but it throws but little light on this intermittent mode of opening. I observe, however, that most of the flowers have set well, and also that the flowers have been shot off the embryo fruit sooner than usual. The flowers seem thinner in texture, and altogether more flimsy than they are wont to be. This want of substance may explain their early fading and falling, which is a misfortune, as the dead blossoms ordinarily form most useful shields to the embryo fruit. Peaches and Nectarines have expanded more regularly and set with wonderful rapidity. I observe in them the same early shooting of the dead blossoms, probably from the same cause—lack of vigour and substance. I have seldom seen such small fruit already naked. Under glass I consider this early shooting of the bloom an advantage. When it hangs too long, it injuriously compresses—occasionally strangles—the fruit, and almost cuts it in two. But out-of-doors the longer the blossoms adhere to the fruit the safer it is. Almost everything depends on the next three or four weeks. With genial weather the walls may yet be furnished with their full complement of Peaches, Nectarines, Apricots, Plums, and Cherries. The latter like a wet season. I have never seen the blossoms more numerous and vigorous than they are this spring. To say the walls are whitened over with their pure white bloom conveys an inadequate idea of the profusion. There is in fact no wall visible, it is all Cherry blossom, and this more especially when the most profitable of all modes of Cherry training is adopted—that of fixing the leaders to the wall, and allowing the out-growth to jut out a foot or more from it. This half-standard style ought to be called the fill-basket mode of training; it also suits the trees well. No gum or canker appears on those trees, which are allowed to keep up their stamina by freedom of growth. Morellos also do well trained in the same way. The shoots should be merely thinned and shortened at the winter pruning. Protection must be afforded for at least another month, and every leaf and shoot should be left on Peach and all other wall trees till the middle of May. These will cover and shelter the young fruit better than any artificial substitute, because they are nature's own provision for this especial purpose. Alone they will often bring the crop safely through the night frosts and cutting winds of our ungenial springs. They also powerfully aid all other means of protection, such as glass and wooden copings, glass frames, bunting, woollen nets, &c. One of the greatest follies we can commit is to go to the trouble and expense of artificial protectors of all sorts and sizes, and then recklessly cut off the shoots and leaves provided for this express purpose by the plant itself. Besides, surely it is a practice as unnecessary as it is injudicious. The young shoots at first neither rob each other nor the roots. They only use the supply of sap laid up for them in the autumn, and, when that is exhausted, they wake up the roots to furnish more. It is rather a nice point in vegetable physiology to determine exactly at what period of their growth this awakening occurs. But it may be safely affirmed that long before there is any serious loss of root force, from the feeding of superfluous shoots, it will be quite time for the latter to be removed, the fruit having become sufficiently strong to thrive with less shelter in the more genial weather which will doubtless then prevail.

Bury St. Edmunds, April 24th. D. T. Fish.

Vine Leaf Excrescences.—The under-sides of my Vine leaves seem to get gradually covered over with very fine blisters, which after a little time turn black, giving the leaf a speckled appearance. The black spots enlarge and unite, and the leaf turns yellowish. The disease is spreading over the whole vinery, consisting of Muscats and Hamburghs. The fruit is setting, and I am beginning to entertain fears as regards its maturity. The Vines are planted in an outside border.—J., *Guernsey.* [When the leaves in question reached us, they were so dried up that it was difficult to make out whether insects or some chill as regards the roots was the cause of the blistering. Sometimes leaves of strong healthy Vines show such spots; but they do not spread or join together like those on the leaves sent, nor do they affect the fruit. If the cause is thrips, which often get a lodgment on Vine leaves through Indian Azaleas or other plants being kept in vineries, fumigation and frequent syringings must be resorted to as soon as the young berries get about the size of small Peas. If the Vine mildew or oïdium is the cause of the mischief, it will be easily recognised by its flowery dust and peculiar smell, and in that case the foliage and bunches must be dusted over with flowers of sulphur till the evil is conquered. As, however, the Vines are planted outside, some chill or check may have affected the leaves, and as the season is now setting in warm, if that is the cause, healthy young leaves will soon appear on the young shoots and laterals, which will mature the crop properly.—William Tillery, *Welbeck.*]

Adopted Fruits.—The following fruits have, after trial, been adopted by the Pomological Congress of France:—Apricots: Liabaud and Mexico. Cherries: May Duke, Short-stalked Guigne d'Oullins, Guigne luisant, Large Black Heart, Black Tartarian. Figs: Moussonne, White Marseilles, Peau dure, Verdale. Peaches: Gaboulais tardive, Précoce de Hallès, Early Anne, Royale de Piémont, Early York. Pears: Beurré Delanoy, Clapp's Favourite, Senateur Vaisse, Souvenir d'Hortolès père. Apples: Baldwin, Champ Gaillard, Caroly, Lagrange. Plum: Prune de Montbriand. Grapes (table): Clairette blanche, Clairette rose, Muscat caminada, Early White Frontignan, Muscat Salomon, Sultanich, Trebbiano. Grapes (wine): Black Cluster, Etraire de la Duy, Persan or Petite Etraire, Trebbiano.

THE LIBRARY.

LES PLANTES BULBEUSES.*

In these two volumes of M. Bossin we recognise one of those excellent practical works in which French horticultural literature abounds. Written, not for the botanist, but for the gardener, it makes no pretensions to scientific arrangement, but simply presents, in alphabetical order, the various subjects of which it treats. It comprises the bulbous plants of the Amaryllidaceæ and Liliaceæ only, the author having, for some reason or other, thought fit to exclude the family of Iridaceæ, in which the Gladioli, Ixias, &c., have certainly as much claim to be considered bulbous plants as the Tritomas, which he admits among the Liliaceæ. We, consequently, find no account of many lovely plants usually termed bulbous, such as Anomatheca, Tritonia, Schizostylis, Tigridia, Trichonema, &c., not to mention the Crocuses and Colchicums. We trust, however, that it is the author's intention to treat of these in a succeeding volume. In the present work, the manner in which the Hyacinths, Lilies, and Tulips are dealt with is particularly deserving of notice. Each article is complete in its enumeration of species, its descriptions, and, above all, in its cultural instructions, to which M. Bossin's long experience gives an especial value. But, while these three genera are treated of at very great length, sufficient attention has also been given to all the other subjects, and we are much pleased to add to our shelves what we consider an exceedingly valuable book of reference.

THE POPULAR RECREATOR.†

The second part of this publication well sustains the interest created by the appearance of the first, and contains, in addition to general matters of recreation, an essay on "Window Gardening." In this we find the following instructions respecting the fitting-up of window boxes with zinc trays:

> The only modification of flower-boxes necessary, when they are to be employed indoors, consists in placing a tin or zinc tray at the bottom, which may catch the drained-off water, and convey it into a vessel prepared for its reception. This is important, as both carpet and furniture would inevitably be spoiled without it, since it is frequently difficult or impossible to remove the plants for watering without injury. To fit a zinc tray to a trough or box of this description is a very simple and easy matter. We will suppose the box to be 8 inches wide, and 4 feet in length. A piece of zinc (that known as No. 13 thickness will answer perfectly) should be provided, 4 feet 4 inches in length, and 12 inches wide. This will allow of the edges being turned up 2 inches on each side. The size of the bottom of the box should be marked out on this, and these lines should be scratched in (not too deeply) with a knife or blunt chisel; these lines will leave four squares at the angles, which must be cut out. The edges must then be turned up so as to form a tray, which should be fitted into the box before soldering. After this the angles should be soldered up, which may be effected by first damping, by means of a feather, each angle for about half an inch on each side with muriatic acid or spirits of salt. The solder being melted with the soldering-iron, or copper-bit, as it is technically termed, the edges will speedily become united, and a watertight tray will be formed. In this, near one end, should in like manner be soldered a short piece of lead or zinc pipe, which should be passed through the wooden bottom of the box, and which will serve for the escape of the water. It is an improvement if a small tap, such as those used for gas fittings, be applied to the end of this pipe, but it is not essential. Slips of wood, upon which the pots should stand, should be laid upon the bottom of the zinc tray. Of course, in order to facilitate the outflow of the water, the boxes should be fixed slightly lower at the end where the pipe is placed; and before the plants are watered, a pail or other suitable vessel should be so arranged under the pipe as to catch the waste. This is a very cleanly method of procedure, and should always be adopted.

Rustic Fern Case.

In this chapter the formation of Fern-cases is described at some length, with appropriate illustrations, of which we give the accompanying as a specimen.

The grandest forest, says an American paper, of Pine lumber in California, containing white, yellow, and sugar Pine, Cypress, Arbor vitæ, and other trees valuable for timber, lies between Susan Valley and Pitt River.

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* Les Plantes Bulbeuses: Espèces, Races, et Variétés Cultivées dans les Jardins de l'Europe; avec l'Indication des Procédés de Culture. Par M. Bossin. Paris: Librairie Agricole de la Maison Rustique, 26, Rue Jacob. 1872.

† "The Popular Recreator." Cassell, Petter, & Galpin.

THE INDOOR GARDEN.

THE BEST FUCHSIAS CLASSIFIED.

The following notes on Fuchsias were made on a collection of young plants, flowered in the gardens of the Royal Horticultural Society at Chiswick in comparatively small pots, and fairly showing the natural habit and peculiarities of the several varieties. At the time they were examined by the Floral Committee they were in a free healthy condition of growth and abundantly flowered, so that it may be presumed a fair estimate of their respective merits was arrived at. In the subjoined Report an attempt has been made to group them in such a manner as to convey a tolerably accurate notion of their colours. The three asterisks (***) indicate the highest degree of excellence, two (**) the second, and one (*) the third, all other kinds being omitted.

WHITE CALYX, ROSY-PURPLE COROLLA.

***Fairest of the Fair.—Habit free, dwarf, and drooping. Flowers medium size; tube ⅝ inch long, bulged; sepals ⅞ inch long, recurved, green at the tip; corolla ¾ inch long, clear rosy purple, paler at the base.

**Rose of Castile.—Habit stiff, compact, profuse-flowering. Flowers medium size; tube ½ inch long, bulged; sepals ⅞ inch long, spreading, green at the tip; corolla ¾ inch long, clear rosy purple, with white feather at base. Still a useful decorative variety.

WHITE CALYX, LAKE COROLLA.

***Delight.—Habit drooping, free. Flowers medium size; tube scarcely ½ inch, bulged; sepals 1¼ inch, spreading; corolla ⅞ inch, conical, deep lake, with whitish base. An improvement on Duchess of Lancaster.

***Lady Heytesbury.—Habit free and good. Flowers medium size; tube ⅝ inch, slender, tapered downwards; sepals 1 inch, somewhat reflexed; corolla ⅞ inch, deep lake, with white feather at base.

***Starlight.—Habit good, free-blooming. Flowers medium size; tube ¾ inch, thickest upwards; sepals ⅞ inch, spreading, faintly blushed, green at the tip; corolla ⅞ inch, very clear and pure lake. An excellent sort.

WHITE CALYX, ROSY CARMINE COROLLA.

***Anne Boleyn.—Habit dwarf, free, drooping. Flowers medium size; tube ⅝ inch, very thick, and bulged at the base; sepals somewhat spreading, blush, green at the tip; corolla ⅞ inch, full, deep rosy carmine, with paler flame at the base. A very elegant variety.

**Arabella (Attraction, Mrs. Marshall).—Habit free. Flowers medium size; tube 1 inch; sepals 1⅛ inch, spreading; corolla ⅞ inch, compact, deep rosy carmine. The varieties grown under the names given as synonyms were considered to be identical with this, which is superior to Arabella Improved, the latter being coarser in habit. A good market flower.

WHITE CALYX, BRIGHT RED COROLLA.

**Cherub.—Habit good, free-blooming. Flowers medium size; tube ⅞ inch; sepals 1 inch, pale blush, spreading; corolla ⅝ inch, compact, bright red. A useful variety.

*Josephine.—Habit dwarf and free. Flowers medium size; tube ⅞ inch, bulged; sepals ¾ inch, blush, green-tipped; corolla ⅝ inch, spreading, carmine-red. A showy decorative plant.

SCARLET CALYX, DOUBLE WHITE COROLLA.

***Enchantress.—Habit good. Flowers medium size; tube ½ inch, slender; sepals ⅞ inch, broad, somewhat deflexed; corolla full and even, pure white. Bold and very handsome.

**Vainqueur de Puebla.—A model as to habit. Flowers medium size; tube ¾ inch, slender; sepals ⅞ inch, broad; corolla white, veined with red, full. A fine decorative variety.

SCARLET CALYX, SINGLE WHITE COROLLA.

***Conspicua.—Habit stiff. Flowers large; tube rather over ⅜ inch, bulged; sepals 1⅛ inch, spreading, broadish; corolla ⅞ inch, somewhat expanded, white, with scarlet feather at the base.

***Puritani.—Habit dwarf, drooping, and elegant. Flowers medium size; tube ⅜ inch, bulged; sepals ⅞ inch, spreading; corolla ¾ inch, full, even, white, with rosy-scarlet feathery veins. A fine variety.

***Pursuit.—Habit free and elegant. Flowers medium size; tube scarcely ⅜ inch; sepals 1 inch, scarcely spreading; corolla ⅝ inch, somewhat expanded, white, with conspicuous rosy-scarlet veins. One of the best.

SCARLET CALYX, DOUBLE PURPLE COROLLA.

***Avalanche.—Habit good and free. Flowers large; tube ⅜ inch, tapered from the base, slender; sepals ⅞ inch long, ½ inch broad, deflexed; corolla ¾ inch deep, full and even, dark violet-purple. A fine, bold variety.

***Marksman.—Habit dwarf and free. Flowers medium size; tube ⅝ inch, slender; sepals ¾ inch, broad, spreading; corolla ⅝ inch, spreading, regular, violet-purple, reddish towards the base. A most useful market sort, which never seeds.

***Purple Prince.—Habit dwarf and free. Flowersl arge; tube ½ inch, bulged; sepals ¾ inch, concave and deflexed as in Globosa; corolla ½ inch long, 1½ inch broad, shallow, but much expanded, regular, reddish violet. A large, showy, but rough flower; good for decorative purposes.

**Alliance.—Habit neat and dwarf. Flowers large; tube fully ⅜ inch; sepals 1 inch, reflexed; corolla ⅞ inch, compact, full, light reddish violet, with a red base. A very neat flower.

**Extraordinary.—Habit very free. Flowers small; tube ⅜ inch, tapered upwards; sepals ⅝ inch, close, concave, deflexed; corolla about ½ inch, compact, deep violet-purple. Like a double form of Globosa.

SCARLET CALYX, MAROON COROLLA.

***Noblesse.—Habit good and free. Flowers medium size; tube about ½ inch, slender; sepals ¾ inch, spreading, bright crimson-scarlet; corolla ⅞ inch, prominent, rich maroon, flushed and veined towards the base with red. A very fine Fuchsia.

SCARLET CALYX, DARK VIOLET-PURPLE COROLLA.

***Weeping Beauty.—Habit dwarf, free, and good. Flowers medium size; tube nearly ⅜ inch, rather bulged; sepals 1 inch, broadish, bright crimson-scarlet; corolla ⅝ inch, moderately expanded, rich deep purple. A very fine Fuchsia.

**Crown Prince of Prussia.—Habit dwarf and free. Flowers rather large; tube ⅝ inch, bulged; sepals ⅞ inch, broad; corolla ⅝ inch, prominent, dark purple, reddish at the base.

**Inimitable.—Habit dwarf and free. Flowers medium size; tube ⅜ inch; sepals 1 inch, spreading; corolla ¾ inch, somewhat expanded, violet-purple, reddish at the base. A good useful variety.

SCARLET CALYX, REDDISH-PURPLE COROLLA.

***King of the Fuchsias.—Neat and dwarf in habit, and a free bloomer. Flowers medium size; tube ⅜ inch, stoutish; sepals 1 inch, broad, spreading; corolla ¾ inch, prominent, rather spreading, reddish-purple. A distinct-looking and desirable variety.

**First of the Day.—Dwarf, neat, and free-blooming. Flowers medium size; tube scarcely ⅜ inch; sepals ¾ inch, reflexed; corolla ¾ inch, light reddish-purple, redder towards the base. A good variety for growing in the form of small plants.

SCARLET CALYX, LAKE-RED COROLLA.

***Commander.—Habit good. Flowers large; tube ⅜ inch, stoutish; sepals 1⅛ inch, spreading; corolla about 1 inch, conical, light lake-red. A bold handsome flower, and showy as a pot plant.—*Thomas Moore, in the Journal of the Royal Horticultural Society.*

POINSETTIA PULCHERRIMA.

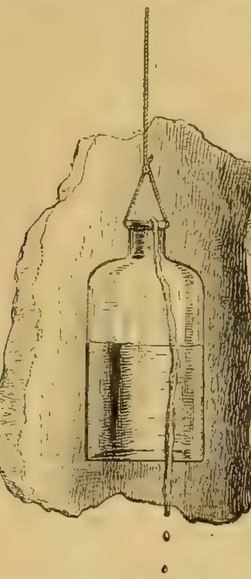
This deservedly favourite winter-flowering plant is too well known to require description. It may not, however, be so generally known that it may be induced to flower a second time, *i.e.*, twice during the same season, and that it may be had in that condition up to the month of May, or even later. I have sent you some bracts gathered from plants in 6-inch pots that flowered the first time during December and January. After they had done blooming, they were cut down to within an inch or two of the surface of the soil in the pots. They were still kept in heat, and the intention was to grow them on in order to produce early bracts for cutting, &c., during the early part of next winter. They soon produced shoots which bore beautiful floral leaves when two, or not in any instance more than three, inches long, but no green foliage. These red leaves or bracts developed themselves about the middle or during the last week of March, and the plants have continued in much the same state up to the present time (May 3rd). Their appearance is certainly remarkable, as they have produced no normal or green foliage whatever; on the contrary, they are lovely little bushes of intense scarlet. The plants were struck from eyes in February 1872, in the same way in which Vines are usually propagated. They were kept in a cool pit during the summer months, and as has already been said, they flowered the first time during the months of December and January. I am inclined to ascribe their flowering so promptly the second time to the circumstance of their being cut back so early in the season—about the beginning of February. But as to whether a similar result may (or may not) be hereafter produced by plants treated in this way I am as yet unable to say; the thing is, however, worthy of a trial. P. G.

Culford, Bury St. Edmunds.

[The bracts or floral leaves that accompanied this communication were of good size and beautifully coloured.]

MOISTENING CORK FERNERIES.

In reference to virgin cork as a material for Ferneries under glass, I have long since come to the conclusion that it is, without exception, one of the worst materials in regard to porosity that we can make use of. I quite agree as to its artistic effect, the great objection with me has been that it is impossible to keep it moist without a large amount of attention in regard to watering. Supposing it were watered three times a day, so little is its porosity, that towards evening it would become perfectly dry. With respect to the remedy, it is as follows:—I suspend from the roof some half dozen half-pint bottles, filled with water, and adapting a few strands of lamp cotton, leave the long end hanging over the neck of the bottles, so as to act as a syphon and allow the drops to fall upon a piece of flat Moss, which has been tacked on to the cork. The bottles require attention only once in two or three days, and the result is that I am enabled in this way to keep moisture in the cork. It is important, however, that the cork should have a thorough syringing before commencing with the bottles. The latter need not be in any degree unsightly, as it is a simple matter to place a piece of cork in front of them in such a way that they are entirely hidden.



Mode of moistening Cork Ferneries.

283, Clapham Road. William Soper.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Myrtus tenuifolia.—This uncommon species of Myrtle deserves genera culture, on account of its graceful habit. Allowed to droop downwards it is very suitable for a vase, or for placing on a pedestal.—R.

Rivina humilis.—This plant, common in our stoves and easily known by its racemes of bright coral-coloured berries, looks very well planted out against a back wall of a stove, and bears its berries throughout the year in such a position.—V. H.

Tacsonia Van Volxemii as a Winter Bloomer.—In the conservatory at St. Leonard's, near Maidstone, there is a plant of this now sending down its exquisite parasol-like flowers from the horizontal bars and rafters. The gardener there informed us that it has been flowering all through the past autumn and winter in like manner. This quality of winter-blooming, in addition to its unique beauty, ought surely to give it the first place among conservatory climbers.

Nægelia Margarita.—This is a hybrid between N. amabilis and N. alba lutescens, raised by M. Desmoulins, gardener to M. Binder, of L'Isle-Adam. It is perhaps the very finest of the white-flowered Nægelias, and as it continues in bloom all through the winter, it forms during that season one of the most attractive ornaments of the warm house or stove. The leaves and stem are of a pale green or slightly ferruginous colour, but not zoned or striped with red as in many of the species; and the flowers are large, pure white, pendent, and disposed in a compact conical spike of very pleasing appearance.

Plant Tubs.—Can you inform me whether or not tubs for plants, such as are figured in Macintosh's "Book of the Garden," vol. ii., p. 652, are made or sold now, as they are the best I have seen as yet?—C. R.——[We do not think such tubs are anywhere kept in stock; but any carpenter could readily make them. They are square, and wider at the top than at the bottom; two of the sides are fixed by means of two iron studs let into the bottom framework, and their upper part is secured to the other two sides by iron bands, which, being lifted up, allow the two opposite sides to fold down, these being hinged to the bottom frame.]

THE GARDEN GUIDE.

KENT.

LINTON PARK.

Looking southwards over the Weald of Kent, and embosomed in groves of evergreen trees, Linton Gardens are attractive at all seasons; but at none more so than on this sunny May morning, when all the hollows are silvered with Ladies' Smocks, and the large cups opened on the standard Magnolias. Among the most interesting gardens in the kingdom, Linton is chiefly remarkable for its trees, particularly Pines, many of which are very fine specimens: among them, the Monterey Pine (P. insignis) is 65 feet high, the Austrian Pine 55 feet, the Swiss Pine (P. Cembra) 55 feet, the Yellow Pine (P. Ponderosa) 55 feet, the Bhotan Pine (P. excelsa) 41 feet, Webb's Silver Fir (Picea Webbiana) 37 feet, P. lasiocarpa 17 feet, P. Pinsapo 44 feet, a P. cephalonica 50 feet. The Redwood (Taxodium sempervirens) is 37 feet high, an Araucaria imbricata 34 feet, a Deodar 49 feet, Lambert's Cypress 45 feet, the Giant Thuja (T. gigantea, commonly known as T. Lobbii) 35 feet, and the Nutka Sound Cypress (Cupressus Nutkaensis) 23 feet. A Cork tree here is one of the finest things in the country, being 9 feet round the waist, the cork very thick and rugged, and the shoots all with a weeping tendency, like those of some of the evergreen Oaks in California. Worthy of association with this is a Tulip tree 11 feet in girth, and remarkable for sending forth huge branches horizontally and near the ground, which is not the usual habit of the tree. There is an avenue of Wellingtonias: this tree is not so remarkable for size here as some of those previously named. The evergreen Magnolia (M. grandiflora) thrives as a standard, and trained, up the columns of the house, grows 30 feet high, its fine glistening foliage beautifully adorning the front of the mansion. There is a picturesque cool fernery, laid out by Mr. Blake in his best manner, and a large and handsome conservatory. The terrace is a pleasing one—and is called for by the nature of the ground, sloping, as it does, rapidly down to the Weald; and the view it commands is extensive and pleasing. The effect of the south front of the house is charming, from its being freely adorned with climbers. Camellias do well in the open air away from walls. There is a fine avenue of mixed trees approaching the house; also two of Elms, of good size. There is not the vast spread of glass here that one looks for in large places now-a-days; but Pines and Vines are well done. The park is prettily varied—open in the centre, and with its boundary well concealed; but somewhat disfigured by a small dot of water. Bedding out is extensively carried out here, though not so much as it used to be. Altogether, the garden is most instructive and interesting. It contains quite a model of a gardener's house. To other important features of this garden special allusion will be made hereafter. The above measurements of trees were made last September.—Viscount Holmesdale* (gardener, Mr. J. Robson), Maidstone.

HUNTON COURT.

Not a large, but a pretty garden, containing a good specimen of an unusually large variegated Elm, which is sometimes almost white in summer, but varies considerably in this respect from season to season. There is also an unusually good deciduous Cypress; pretty Ivy borders and baskets, interesting mixed borders, and a fair fruit and kitchen garden, but little glass. In the churchyard close by, there is a fine old Yew more than 16 feet round.—Mrs. Bannerman (gardener Mr. Goddard), Maidstone.

LOOSE CHURCHYARD (near Maidstone).

Here is a very remarkable Yew. Measured twenty years ago, by Mr. Robson, of Linton, it was 32 feet 10 inches in circumference round the narrowest part of the waist. It is now so surrounded by a close ugly paling that measuring it or even seeing the grand bole readily is out of the question. One of the branches is as large as many Yew trees considered to be giants of their kind. The head is quite healthy, and the spread of branches (measured on the 2nd May, 1873) about 63 feet in diameter.

EAST SUTTON.

There are fair kitchen and fruit gardens here, and well handled trees of bush Apples and pyramidal Pears. There are also well covered walls, and some fair fruit houses and glass cases. The park is much varied in surface, and commands extensive views over the Weald of Kent. It is thickly wooded, and contains some unusually good groups of Oak, Ash, Elm, and Chestnut trees. Conifers seem to thrive, though few specimens are to be seen.—Sir E. Filmer (gardener Mr. Skinner), Maidstone.

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* In these brief notices of some of our more instructive gardens, we propose to give the proprietor's name and that of the gardener, together with the nearest town or village from which the places mentioned can be most conveniently reached.

MAIDSTONE CEMETERY.

This is a large and creditably kept cemetery, and has been freely planted with Pines and other evergreens during the past fourteen years. An avenue of Austrian Pines looks so well as to make us ask if we are not wrong in ignoring the claims of this while planting abundantly such things as the Wellingtonia and Araucaria, almost sure to fail as avenues. Although young, the avenue of Austrians here is most imposing. It is much to be desired that tasteful grouping of trees in cemeteries would take the place of the promiscuous dotting which is now the rule.

ORCHARDS IN THE MAIDSTONE DISTRICT.

The country hereabouts is to a great extent a fruit garden, or rather a fruit farm. Cherries, Filberts, Plums, and Apples are the fruits mostly grown. The Cherry-orchards predominate, and are very lovely late in April or early in May. Earth, wild or cultivated, has few things more fair to show than a Kentish Cherry-orchard in full blossom, the fresh green Grass beneath the trees being whitened with the snowy blooms falling in gentle showers, and the sheep grazing quietly around. The Filbert is abundantly grown as a large close-pruned basket-tree, frequently planted beneath the taller orchard-trees. It is greatly to be regretted that the orchard is a feature so often absent from the country seat in most parts of Britain. Well planted and managed nothing is more beautiful or profitable; and surely it would be well to add to the usually poor supplies obtained from standard trees in the kitchen garden, &c., by creating in every place where there is room enough an orchard of trees, the fruit of which may be depended upon to attain perfection in the district in which they are planted.

PRESTON HALL.

A large, well-designed and well-kept garden, rich in varied interest, the mansion finely situated in an undulating park, sloping down to the valley of the Medway, and with excellent views. The design of the garden is far above the average of merit in this way, and only marred by some feeble lines of standard Roses. The terrace garden is good and not over large. There are fair specimens of Pines and groups of Horse Chestnut and Elm, of each tree of which there are specimens 22 feet round the waist. There are good fruit houses and glass walls, and the fruit and kitchen gardens are neatly kept and well cultivated. Here is the best orchard I have ever seen in a private place. If gardeners generally could see this, no doubt our fruit rooms would one day be better filled than they are nowadays from the little spaces stolen for fruit trees from the kitchen garden. A plan and description of this orchard is being prepared for The Garden. The fruit-room, offices, &c., are excellent, and Preston Hall gardens are in all respects beautiful and instructive, whether looked at from the point of view of landscape gardening, good keeping, or cultivation.—H. A. Brassey, Esq. (gardener, Mr. W. Bradley), Maidstone.

LEYBOURNE GRANGE.

Situated in a wide and beautiful park, in many parts well planted. The fruit and kitchen gardens here are good, and there is an excellent glass wall, the cultivation generally being of the best kind. Plant culture has been given up for that of fruit, and the large conservatory is planted with Vines. There is a pretty Grass orchard, in which is a Bigarreau Cherry 60 feet in the diameter of its branches, and looking, in bloom, this 4th day of May, more like a Cedar snowed over than a Cherry tree. The best trees in the park are Elms. In a wood there is a curious "Siamese Twin" Elm. Two Elms grow tall and erect, 2 feet apart; 7 feet above the ground an immense branch about 2½ feet deep passes from one to the other, the trees above this juncture not having any remarkable features. The black American Spruce is extensively planted in the woods instead of the common Spruce, which fails here; and there are long avenues in the woods margined by the always robust and vigorous Austrian Pine.—Sir J. Hawley (gardener, Mr. Bowman), Maidstone.

ST. LEONARD'S.

The house, on a rising bluff, pleasantly overlooks a piece of well-managed river-like water and some pretty park ground beyond it. There is a compact and well-kept kitchen garden and good orchard, a range of glass devoted to fruit and plant culture, a pretty small flower garden and a conservatory with one end tastefully arranged with Ferns in the natural style. Dracæna indivisa grows freely in the open air here, though occasionally a severe winter hurts it. Even then, however, it springs again from the ground.—Mrs. Savage (gardener, Mr. Henderson), Maidstone.

MEREWORTH.

There is a good kitchen and fair fruit garden here, and an exellent series of fruit and forcing houses, in which the best cultivation may be seen. Peaches are unusually well grown in the houses. The flower garden, which surrounds the house on three sides, is an over-elaborated one, embellished with the pounded red brick rubbish which seems somewhat popular in the gardens of Kent, judging by the gardens near Maidstone. The park is boldly varied, but is not remarkable for trees or planting. A fine glossy tuft of Mistletoe, 4 feet or more deep, and a yard through, hangs from a rather young tree of the common Acacia, near the house.—Lord Falmouth (gardener, Mr. Horton), Maidstone.

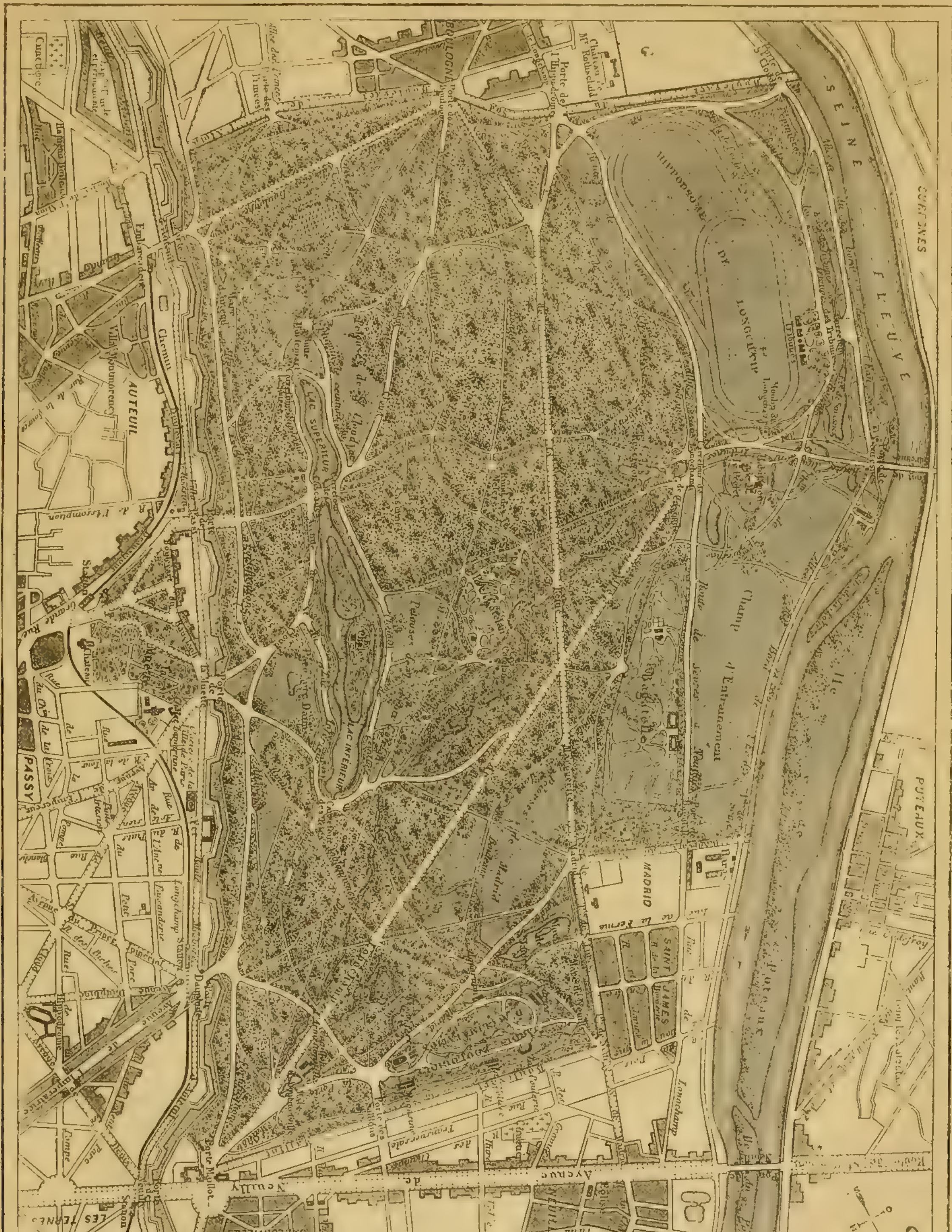
In the village of Mereworth, in the cottage-garden of Mr. Sudds, there is a Yew tree which seems the only worthy relic I have ever seen of the best days of the art of the topiarist. It is clipped into five perfect tiers, and above that waves a free-headed tree, probably about 40 feet high. By far the best and most striking example of a clipped Yew in this part of the country; it is, though verdant and vigorous, an old tree. R.

PUBLIC GARDENS.

THE BOIS DE BOULOGNE.

Few parks or public gardens offer a finer example of improvement or design than this. How we improve by friction! Till 1852 the Bois was virtually a forest; but Napoleon III., in his admiration for English parks, determined to add their charms to Paris, or rather to improve upon them, and the Bois is one result. As a combination of wild wood and noble pleasure-garden it is magnificent. The Bois de Boulogne contains more than 2,000 acres, of which nearly half is wood, a quarter grass, one-eighth roads, and more than 70 acres water. It has more than the beauty and finish of any London park in some spots, but, on the other hand, vast spreads of it are covered with a thick, small, and somewhat scrub-like wood, in which wild flowers grow abundantly. The planting on and near the islands is far superior to anything to be witnessed in our own parks. There are some of the finest views here ever seen in a public park—the water in one direction looking like an interminable inlet, beautifully fringed with shrubs and trees, while in another several charming views are opened up, showing the hilly suburban country towards Boulogne, St. Cloud, and that neighbourhood. There is some bold rockwork attempted and well done about the artificial water; and very creditable pains are taken to make the vegetation along it diversified in character, so that at one place you meet Conifers, at another rock shrubs, in another Magnolias, and so on; without the eternal repetition of common things which one too often sees at home. At Longchamps there is a large and ambitious cascade. Above the spring or shoot of the cascade is an arch of rustic rocks, over which fall Ivy and rock shrubs, the whole being backed with a healthy rising plantation; but, although made at great expense, this cascade cannot be pronounced a happy one. The fault of the most frequented part of the Bois de Boulogne is that the banks which fall to the water are in some parts a little too suggestive of a railway embankment, and display but little of that indefiniteness of gradation and outline which we find in the true examples of the natural style of laying out grounds. But you do not notice this from the position above described, from whence indeed the scene is charming. The fault just hinted at is common to almost every example of this style to be seen about Paris; and in most of their walks, mounds, and the turnings of their streams, you can detect a family likeness and a style of curvature which is certainly never exhibited by nature.

Apart from the perfect keeping of the whole, the chief lesson to be learnt here by the English planter is the value of paying far greater attention than we at present do to the artistic planting of choice hardy trees and shrubs. The islands seen from the margin of the lakes are at all times beautiful, in consequence of the presence of a varied collection of the finest shrubs and trees tastefully disposed. They show at a glance the immense superiority of permanent embellishment over fleeting annual display. The planting of these islands was expensive at first, and required a good knowledge of trees and shrubs, besides a large amount of taste in the designer; but it is so done that were the hand of man to be removed from them for half a century they would not suffer in the least. Nothing could be easier than to find examples of gardens quite as costly in the first instance, which, while involving a yearly expenditure, would be ruined by a year's neglect. It is summer, and along the margins of these islands you see the fresh pyramids of the deciduous Cypress starting from graceful surroundings of hardy Bamboos and Pampas Grass, and, far beyond, a group of bright silvery Negundo in the midst of dark-green vegetation, with scores of tints and types of tree-form around. It is spring, and the whole scene is animated by the cheerful flush of bloom of the many shrubs that burst into blossom with the strengthening sun, and, while the Oaks are yet leafless, the large swollen flower-buds of the splendid deciduous Magnolias may be seen conspicuous at long distances through the other trees. In autumn the variety and richness of the tints of the foliage offer a varied picture from week to week; and in winter the many picturesque and graceful forms of the deciduous trees among the evergreen shrubs and Pines offer to the observant eye as much interest as at any other season. The Bois suffered to a fearful extent during the war, but the French, with their wonderful powers of recovery, so to say, will soon restore its old glories.



PLAN OF THE BOIS DE BOULOGNE

THE FLOWER GARDEN.

NEW, RARE, OR NEGLECTED ALPINE PLANTS.

(*Concluded from page* 333.)

Primula altaica (Altaian Primrose).—Among the choicest gems of the hardy spring garden there are few that will bear comparison with this, and yet there are few gardens where it is to be found. In general appearance it very closely resembles our own *P. acaulis (vulgaris)*, but may at once be distinguished by its narrow and more deeply-cleft petals, the reddish hue of its flower-stalks, and its singularly attenuated, deeply channeled, and sharply cuspidated calyx, the basis of which is not nearly so deflexed as in *P. acaulis*. The tube of the corolla, too, rises higher above the calyx than in the last-named species. The flowers, which are produced in great profusion—quite smothering the plant when it is in a healthy state—are of the most lovely soft mauve, the base sulphur, with an orange spot in the centre. It comes into bloom several weeks earlier than the common Primrose; in fact, it is the companion of the earliest Aconites, Snowdrops, and Snowflakes It seems to come quite true from seed, but is very shy in ripening any. It may be grown either in the rock-garden, or the choice mixed border, in moist, deep, sandy loam.

Primula japonica (Japanese Primrose).—A very noble and perfectly hardy species, recently introduced from Japan, and not inaptly named the "King of the Primulas." Its flower-stems rise from 1 to 2½ feet in height, and in the month of May begin to exhibit the brilliant magenta or deep purplish-crimson flowers, which are very numerous, and arranged in from three to six whorls on the top of the stem, each flower being from 1 to 1½ inch across. The leaves resemble those of *P. denticulata*, and are from 6 to 10 inches long and 3 to 4½ inches broad, forming a rosette 1½ foot, or more, across. If planted in the rock-garden, it should not be among minute alpine species, but grouped with subjects growing a foot or more high, and in sheltered positions, where its fine foliage would not be injured by harsh winds. It is a magnificent plant for a warm sheltered border, or for a position among dwarf shrubs, in sandy loam and leaf-mould. Propagated from seed, which it yields freely. The seed should be sown in light soil mixed with silver sand, in pans placed in cold frames, where they should be allowed to remain until it germinates. Two years may elapse before the young plants appear. Many persons, ignorant of this, have thrown out the contents of their seed-pans in despair, because no sign of germination appeared during the first year, and a great deal of good seed has doubtless been lost in this way. Another cause of failure is placing the seed-pans in heat; they should be kept cool. After the young plants are pricked off and potted, they are sometimes benefited by a little heat, just to start them afresh; but they must afterwards be carefully hardened off.

Primula Parryi (Parry's Primula).—This Primula is spoken of by American botanists as the finest of all the alpines of the Rocky Mountains. It grows from 9 to 12 inches high, and flowers from April to June, bearing heads of the richest purple blossoms. The leaves are erect, and resemble those of *P. longiflora* on a large scale. It requires an abundance of moisture, as in its native habitats it occurs "in shallow streams springing from the melting snows at an elevation of 7,000 feet or more." This fine species has only recently been reintroduced into this country by Messrs. Backhouse and Son, York.

Rhododendron præcox (Early Rhododendron). — In this we have a perfect gem for the rock-garden, the margins of choice dwarf beds of American plants, or any position in which a very beautiful dwarf shrub may be desired. It is a hybrid between the very early-blooming *R. dauricum atrovirens* and the fine *R. ciliatum*, and has the very early-flowering habit of the former with the large and handsome blooms of the latter. It is frequently in full bloom early in March. The leaves are dark green, shining, oval, and slightly ciliated; the flowers, within an eighth or so of 2 inches across, of the most delicate satiny lilac, unmarked by spottings of any kind, and abundantly produced on the compact little bushes. It is a worthy companion to the Dog's-tooth Violet, the Siberian Squill, and Sisyrinchium grandiflorum, which are in full beauty at the same time.

Saponaria cæspitosa (Tufted Soapwort).—A neat, dense-habited species from the Pyrenees, forming very rigid tufts like those of Silene acaulis, but much more robust, and bearing sub-umbellate heads of showy rose-coloured flowers, which first appear in June. It should be planted in deep loam, mixed with gravel and sand, in sunny fissures of rockwork.

Sisyrinchium grandiflorum (Spring Satin-flower).—A beautiful early spring-flowering perennial, 6 to 10 inches high. The flowers are of a rich deep purple, with red style and filaments, and yellow anthers (or pure white, with transparent style and white filaments), issuing from a two-flowered spathe with a thin transparent margin. The leaves are narrow, sword-shaped, and sheathing at the base. A native of the N.W. regions of N. America. Suitable either for the rock-garden or for borders, in light peaty soil or very sandy loam, and in warm positions. It is also a charming subject for growing in pots in cold frames, from which it may be removed to the greenhouse when in flower in early spring. Multiplied by careful division.

Umbilicus spinosus (Spiny Umbilicus).—A very singular looking plant, with somewhat the appearance of a small Apicra or Haworthia. The root-leaves are oblong in shape, convex towards the points, and form a rosette like a Sempervivum, each leaf bearing a spine at the apex. The flowers, which appear early in summer, are yellow, and form a terminal cylindrical spike on the top of the flower-stem, which is furnished with flat lance-shaped leaves. A native of Siberia, China, and Japan. A good plant for the rock-garden, in dry sunny spots. It is perfectly hardy, and my friend, Mr. James Atkins, of Painswick, informs me that on his rock-work it withstood the severe weather of January and February, 1871, without the slightest injury. Its chief enemies are the slugs, which destroy it whenever they have a chance.

Waldsteinia fragarioides (Strawberry Waldsteinia).—A showy plant from N. America, with creeping, bright-red, hairy stems. Grows about 6 inches high, and flowers in summer, when it produces numerous bright-yellow blooms about half an inch across. The leaves are ternate, on long channeled stalks, with obovate, smooth green leaflets, which fade to a lurid red. Suitable for rock-work, borders, fringes of shrubberies, &c., and thriving in ordinary soils.

Wulfenia carinthiaca (Carinthian Wulfenia).—A remarkably dwarf, almost stemless evergreen herb, 12 to 18 inches high, bearing in summer showy spikes of purplish-blue, drooping, tubular flowers, issuing on short stalks from the axils of the bracts. The leaves are oblong, narrowed at the base, doubly crenated, stalked. Found only on one or two mountains in Carinthia. A very ornamental plant for rock-work or borders, in light, moist, sandy loam.

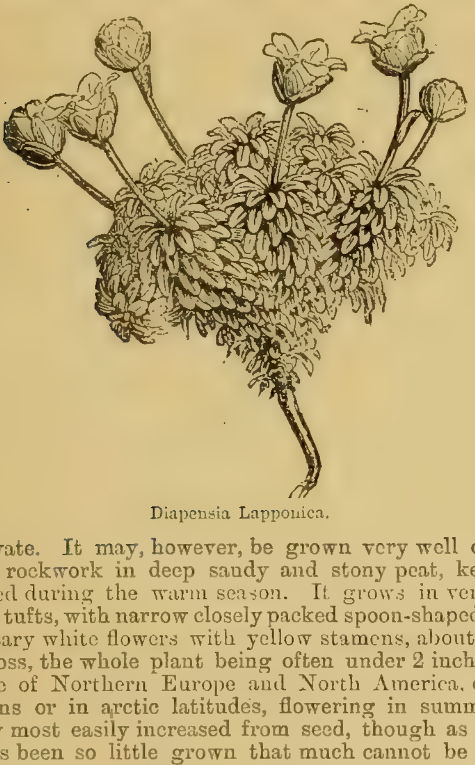
Zapania nodiflora (Creeping Vervain). A pretty and modest-looking, compactly spreading, trailing plant, with prostrate stems 2 or 3 feet or more in length. It blooms late in summer, producing small purplish flowers in small roundish heads, on long stalks springing from the axils of the leaves, which are spoon-shaped, coarsely and irregularly notched, with a wedge-shaped base, attenuated into a stalk. A native of Asia and America. Very suitable for the rougher parts of the rock-garden, or for borders or edgings, in any rather warm soil.

WHAT IS A PRIMROSE?

I take a special interest in this question, not only as a grower of this class of plants, but also because having put a literal, and as I believed, a common sense interpretation upon the Royal Horticultural Society's schedule, I felt myself precluded from entering into competition for the prizes offered for Primroses by that society this spring, simply because I had not enough of true Primroses to suit the requirements of the schedule, and I did not for a moment believe that Polyanthuses would be admitted as Primroses. Now it is a curious fact, bearing on this question, that, in ordinary parlance, no one in speaking of a Primrose ever means a Polyanthus, or in ordering such from a florist would be satisfied to receive a Polyanthus instead of a Primrose. In gardening phraseology the distinction is perfectly understood; one might as soon expect to be given a Pansy for a Violet as a Polyanthus for a Primrose. Indeed in the case of the Viola we find a class of plants that are commonly classified in a fashion analogous to the Primula. The term Viola includes all Violets, double and single, bedding Violas and Pansies, and all English and Belgian kinds, and many less known varieties. Now I maintain that, although the Primrose happens to be a section of the great Primula family, yet it would be just as absurd to term all Primulas Primroses as it would be to term all Violas Violets; indeed, if the schedule had contained a class for six boxes of Violets, no one would have dreamt of putting up any other class of plants than such as are strictly Violets. In all such classes there must be limitations subject to common sense definitions; and what more proper than that the ordinary and popular classification of these plants should in the interpretation of schedules have full significance? If a class for hardy Primroses is inserted in the schedule next year, let us hope that it will be so worded as to leave not a shadow of doubt on the minds of exhibitors as to what is required. I am not at all sure that a class which requires a boxful of plants of each sort is one likely to answer well in the case of Primroses. Under such a mode of showing, the commoner and easily grown kinds are always present, but how is it that the fine double purples, roses, crimsons, and yellows, are never seen staged? Simply because they are more difficult to grow, and a boxful of them is a positive rarity. A dozen sorts, three plants of each, correctly named, to be shown as may be most convenient to the exhibitor, would bring many old and new favourites in the Primrose way to South Kensington. Alex. Dean.

DIAPENSIA LAPPONICA.

This sturdy dwarf little evergreen alpine shrub is rarely seen even in botanic gardens, and is usually considered impossible to cultivate. It may, however, be grown very well on fully exposed rockwork in deep sandy and stony peat, kept well moistened during the warm season. It grows in very dense rounded tufts, with narrow closely packed spoon-shaped leaves, and solitary white flowers with yellow stamens, about half an inch across, the whole plant being often under 2 inches high. A native of Northern Europe and North America, on high mountains or in arctic latitudes, flowering in summer, and probably most easily increased from seed, though as yet the plant has been so little grown that much cannot be said on this subject.



Diapensia Lapponica.

HARDY CYCLAMENS.

GENERAL CULTURE.

Perfect drainage at the roots is indispensable for the successful culture of all the Cyclamens, growing as they often do in their native habitats amongst stones, rocks, and *débris* of the mountains, mixed with an accumulation of vegetable soil—the tubers being thereby often covered to a considerable depth, and not exposed to the action of the atmosphere, as is too often the case under culture, by placing them on the surface of the soil. This practice is in most instances very injurious, drying up and destroying the incipient young leaf and flower-buds when the tubers are apparently at rest; for I find in most species that, though leafless, the fibres and young buds for the ensuing year are still making slow but healthy progress under favourable circumstances. Collectors from abroad should be specially careful in this particular. We seldom find tubers of some of the species that have been much dried or exposed to the air vegetate freely, or sometimes at all. I have now by me some roots imported nearly six years since (I believe from the Greek isles), that were thus exposed, and though the tubers have remained sound and sent out tolerably healthy fibres, they have not until this season produced healthy leaves. They have made two or three abortive attempts before, but always failed. Now, having recovered vigour of foliage, I fully expect them to bloom next autumn. In C. hederæfolium and its varieties the greater portion of their fibres issue from the upper surface and sides of the tuber, indicating without doubt the necessity of their being beneath the soil. The habit in C. coum, C. vernum, and their allies, of the leaf and flower stalks, when in a vigorous state, running beneath the soil, often to a considerable distance from the tuber, before rising to the surface, points in the same direction. Though Cyclamens require perfect drainage at the root, they like plenty of moisture above when in full vigour of growth. Cyclamens generally like a rich soil, composed of good friable loam, well-decayed vegetable matter, and cow manure, reduced to a state of mould, and rendered sweet by exposure to the atmosphere before use. C. hederæfolium and its varieties require a stiffer loam and stronger manure than the others. They are all admirably adapted for rockwork; they enjoy warm nooks, partial shade from the mid-day sun, and shelter from the effects of drying, cutting winds. Neither of these can they bear with impunity. An eastern or south-eastern aspect is best, screened from cutting winds, as affording the requisite protection against heat; but a northern one will do well. They love an open yet sheltered spot; pure air is their delight. I have a northward piece of rockwork covered with them, which, from the end of August, when they begin to bloom, up to the end of March, when the leaves begin to die down, is much admired both for the flowers and also for the beauty of the wax-like foliage. During the dead period of winter it is in full perfection; and few things are more ornamental. Cyclamens are best propagated by seed sown as soon as it is ripe, in well-drained pots of light soil. I generally cover the surface of the soil, after sowing, with a little Moss, to ensure uniform dampness, and place them in a sheltered spot out of doors. As soon as the plants begin to appear, which may be in a month or six weeks, the Moss should be gradually removed. As soon as the first leaf is tolerably developed, they should be transplanted, about an inch apart, in seed pans of rich light earth, and encouraged to grow as long as possible, being sheltered in a cold frame, with abundance of air at all times. When the leaves have perished the following summer, the tubers may be planted out or potted, according to their strength.

Round-leaved Cyclamen (C. coum).—Tuber round, depressed, smooth, fibres issuing from one point on the under side only. Leaves of a plain dark green, cordate, slightly indented; these, with the flowers, generally spring from a short stem rising from the centre of the tuber. Corolla short, constricted at the mouth; reddish purple, darker at the mouth, where there is a white circle; inside striped red. Flowers from December to March, and is a native of the Greek Archipelago. This, with the others of the same section, viz., vernum of Sweet (coum zonale), ibericum, Atkinsii, and the numerous hybrids from it, though perfectly hardy, and frequently in bloom in the open ground before the Snowdrop, yet, to preserve the flowers from the effects of unfavourable weather, will be the better for slight protection, or a pit or frame devoted to them in which to plant them out. I grow many in this way, and during the early spring, from January to the middle of March, they are one sheet of bloom. When so cultivated, it is best to take out the soil, say 1½ foot to 2 feet deep, place a layer of rough stones 9 to 12 inches deep at the bottom, covering them with inverted turf to keep the soil from washing down and injuring the drainage; then fill up with soil composed of about one-third of good free loam, one-third of well-decayed leaf-mould, and one-third of thoroughly decomposed cow manure. Plant 1½ inch to 2 inches deep, and every year, soon after the leaves die down, take off the surface-dressing as far as the top of the tubers, and fresh surface them with the same compost, or in alternate years they may only have a dressing on the surface of well-decayed leaves or cow manure. During summer, or, indeed, after April, the glass is removed, and they are slightly shaded with Larch-Fir boughs (cut before the leaves expand) laid over them, to shelter from the extreme heat of the sun. As soon as they begin to appear in the autumn, gradually take these off, and do not use the glass until severe weather sets in—at all times, both day and night, admitting air at both back and front, and in fine weather draw the lights off, remembering that the plants are perfectly hardy, and soon injured if kept too close. They do not like frequent removal. C. coum album is a variety raised by me, which received a first-class certificate from the

Royal Horticultural Society, 1868. It has the dark, plain foliage of coum, with flowers white, and dark mouth; hardy; same treatment as coum. It is a very distinct and interesting variety, well worthy of culture. C. Atkinsii, a hybrid of the coum section, also raised by me, has larger flowers, white, with dark mouth, and nearly round or ovoid leaves, variously marked. C. vernum of Sweet is considered by many as only a variety of coum, and for it I would suggest the name of C. coum var. zonale (from its marked foliage). I was for a long time unwilling to give it up as a distinct species, but now doubt there being sufficient permanent specific distinction to warrant its being retained as such, especially after seeing the many forms and hues the leaves of other species of this genus assume. Though this, as well as C. coum, retains its peculiarities as to markings very correctly from seed, so do some undoubted varieties of other species of Cyclamen. In Loddiges' "Bot. Cab." t. 108, some years previous to Sweet's publication, it is well figured as C. coum. There are specimens in various herbariums of this form under the name of C. vernum (Sweet), mostly from Iberia and Tiflis.

Iberian Cyclamen (C. ibericum).—This also belongs to the coum section. I fear the original type of the species as first imported into this country is lost; the greater portion now sold as such are hybrids of the Atkinsii group. There is some obscurity respecting the authority for this species and its native country; but there are specimens of it in the Kew and Oxford Herbariums marked "ex Iberiâ." Leaves very various. Flowers in spring: corolla rather longer than in coum; mouth constricted, not toothed; colour various, from deep red-purple to rose, lilac, and white, with intensely dark mouth; produced more abundantly than by coum.

European Cyclamen (C. europæum).—Tuber of medium size and very irregular form, sometimes roundish or depressed and knotted, at other times elongated. The rind is thin, smooth, yellowish, sometimes "scabby." The underground stem or rhizome is often of considerable length and size, sometimes even more than a foot in length. The leaves and flowers originate from stalks or branches, which emerge from all parts of the tuber. The root fibrils spring from the lower surface of the tuber as freely as from the upper, but are never so numerous as in C. hederæfolium; and there are usually two or three stems springing from different parts, and growing in different directions, from which the leaves and flowers arise. When these stems are much elongated and irregular, the plant becomes the C. radice-anemone, or C. anemonoides of some old authors. The leaves in this, as well as in most of the other species, vary much in outline as well as extent of the markings on the upper surface and colour beneath. Those from the more northern habitats are coarser and more decidedly dentate than those from some localities south of the Alps, where they assume in a measure the finer texture, rounder form, and more delicate markings, of C. persicum. The leaves appear before and with the flowers, and remain during the greater part of the year. Flowers from June to November, or, with slight protection, until the end of the year. The petals are rather short, stiff, and of a reddish-purple colour. The base or mouth of the corolla pentagonal, not dentate. Some of the southern varieties, by attention to cultivation under glass, may even assume a perpetual flowering character. The varieties Clusii, littorale, and Peakeanum are of this section. In these varieties the flowers become much longer, are of a more delicate colour, often approaching peach colour, and are almost the size of those of C. persicum. Pure white flowers are rare, but pale ones are not uncommon. They are very fragrant. Thrives freely in various parts of the country in light, loamy, well-drained soil, as a choice border and rockwork plant. Where it does not do well in ordinary soil, it should be tried in a deep bed of light loam, mingled with pieces of broken stone. In all cases it is best to cover the ground with cocoa-fibre. It is a very desirable species, on account of its delightful fragrance and long succession of flowers. I have often seen them luxuriate in the *débris* of old walls, and on the mountain-side, with a very sparing quantity of vegetable earth to grow in.

Ivy-leaved Cyclamen (C. hederæfolium).—A native of Switzerland, South Europe, Italy, Greece and its isles, and the north coast of Africa. Tuber not unfrequently a foot in diameter when full-grown; its shape is somewhat spheroidal, depressed on the upper surface, rounded beneath. It is covered with a brownish rough rind, which cracks irregularly, so as to form little scales. The root fibres emerge from the whole of the upper surface of the tuber, but principally from the rim; few or none issue from the lower surface. The leaves and flowers generally spring direct from the tuber without the intervention of any stem (a small stem, however, is sometimes produced, especially if the tuber be planted deep); at first they spread horizontally, but ultimately become erect. The leaves are variously marked, and the greater portion of them appear after the flowers, continuing in great beauty the whole winter and early spring, when they are one of the greatest ornaments of our borders and rockeries, if well grown. I have had leaves as much as 6 inches long, 5½ inches in diameter, and 100 to 150 springing from one tuber. They are admirably adapted for table decoration during winter. The flowers begin to appear at the end of August, continuing until October. Mouth or base of the corolla ten-toothed, pentagonal, purplish red, frequently with a stripe of lighter colour, or white, down each segment of the corolla. There is a pure white variety, and also a white one with pink base or mouth of corolla, which reproduce themselves tolerably true from seeds. Strong tubers will produce from 200 to 300 flowers each. I have had as many as 150 from one plant blooming at the same time. The varieties from Corfu and other Greek isles are very distinct and valuable additions; there do not appear to be sufficient permanent characters for specific distinction. They generally flower later, and continue longer in bloom. Their leaves rise with or before the majority of the flowers, both being stronger and larger than in the ordinary type, with more decided difference of outline and markings on the upper surface of the leaves, the under surface being frequently of a beautiful purple. Texture thick, shining, and wax-like. Some of them are delightfully fragrant. They are quite hardy, but are worthy of a little protection, to preserve the late blooms, which often continue to spring up till the end of the year. This species is so perfectly hardy as to make it very desirable, not only for rockwork, but also for the open border. It will grow in almost any soil and situation, though best (and it well deserves it) in a well-drained rich border or rockery. It does not like frequent removal. It has been naturalised successfully on the mossy floor of a thin wood, in a very sandy, poor soil, and it may be naturalised with perfect success almost everywhere in these islands. It would be peculiarly attractive when seen in a semi-wild state in pleasure-grounds and by wood walks. It is very frequently sent out by English nurserymen and bulb dealers as C. europæum, though perfectly distinct from that species. It is well figured in Baxter's "British Flowering Plants," p. 505, and is the so-called British species; but it is doubtful whether it is a true native plant. C. græcum is a very near ally, if more than a variety, of C. hederæfolium; it requires the same treatment. The foliage is more after the C. persicum, or the southern var. of C. europæum type than most of the hederæfolium section; the shape of the corolla and the toothing of the mouth are the same. C. africanum (algeriense macrophyllum), much larger in all its parts than C. hederæfolium, otherwise very nearly allied; is hardy in warm sheltered situations.

Spring Cyclamen (C. vernum).—Tuber round, depressed, somewhat rough or russety on the outer surface; fibres issue from one point on the under side only; under cultivation it has little or no stem, but leaves and flowers proceed direct from the upper centre of the tuber, bending under the surface of the soil horizontally before rising to the surface. Corolla long, segments somewhat twisted, mouth round, not toothed; colour from a delicate peach to deep red-purple, very seldom white; deliciously fragrant. Flowers from April to the end of May. Native of South Italy, the Mediterranean, and Greek isles, and about Capouladoux, near Montpellier. Leaves rise before the flowers in spring; they are generally marked more or less with white on the upper surface, and often of a purplish cast beneath; fleshy; semi-transparent whilst young. For many years I believed this species to vary in the outline and colouring of the foliage less than any other, but I have now received imported tubers from Greece, with much variety in both particulars, some of the leaves quite plain and dark green, others dashed all over with spots of white, others with an irregular circle of white varying much in outline. Among these every intermediate form occurs, up to that figured and described by Sibthorp and Sweet. The latter variety is the one more generally met with, and is reproduced from seed very true and unvarying. This, though one of the most interesting species, and perfectly hardy, is seldom met with cultivated successfully in the open border or rockery; it is very impatient of wet standing about the tubers, and likes a light soil, in a nook rather shady and well sheltered from winds, its tender fleshy leaves being soon injured. The tubers should also be planted deep, say not less than two inches to two inches and a half beneath the surface. I have grown them for many years in a border and on rocks without any other protection than a few Larch-Fir boughs lightly placed over them, to break the force of the wind and afford a slight shelter from the scorching sun. Some authorities give C. repandum as a distinct species, but I consider them identical, the only difference being in the shape and markings of the leaves, which are very variable. It is generally cultivated in England under the name of C. repandum, but most of the best continental botanists adopt the name of vernum for it, and it is, no doubt, the original C. vernum of L'Obel.

From the earliest times there appears to have been great difficulty felt by our best botanists in clearly defining the different species of Cyclamen, from the great variation in the shape and colouring of the leaves both above and below. Too much dependence on these characters has been the cause of much confusion and an undue multiplication of species. Some of the varieties of this genus become so fixed, and reproduce themselves so truly from seed, as to be regarded as species by some cultivators. The following are some of the more important synonyms:—æstivum (europæum); anemonoides or radice-anemone (europæum); autumnale (hederæfolium); Clusii (europæum); hyemale (coum); littorale (europæum); neapolitanum (hederæfolium); odoratum (europæum); Peakeanum (europæum); Poli (hederæfolium); repandum (vernum); vernum of Sweet (coum, var. zonale); zonale (vernum of Sweet). C. anemonoides, Clusii, and littorale, are southern varieties of C. europæum, quite distinct from the northern type.

POLYANTHUSES AT BEDFONT.

These are still in beautiful condition, several large beds being full of plants that are producing magnificent trusses of fine flowers. Mr. Dean grows all the commoner kinds of Polyanthus from seed sown in April in the open border, the plants being afterwards pricked out or transplanted permanently. He, however, prefers sowing the seed in boxes of light soil, in pits or frames, in the same month, and when they have made a pair of rough leaves, pricking them out into other boxes, or most commonly into open borders, water being given until they have started into growth. The result of this treatment has produced in the succeeding spring excellent flowering plants, some bearing a dozen fine trusses, several of which contain from three to five dozen well developed blooms. If the plants are left undisturbed for another year their flowers will be infinitely more numerous than those just named, and the trusses will be larger and finer, a fact confirmed by several beds of two-year-old plants, arranged alongside of those containing one-year-old plants. Indeed, some of the plants that are flowering a second season have over two dozen trusses of bloom on them, and some of these trusses consist of over six dozen blooms; on one of these trusses, indeed, a fastigiated or monstrous one, we counted no fewer than 117 blooms. Nor is the size or quantity of flowers their only commendation; their strength of stalk and variety of colouring are also remarkable. Some of the flowers are almost black, others brown, red, pink, lilac, white, and yellow. Some are what are termed hose in hose, but these as a rule have weaker stems and more drooping flowers than the ordinary ones. One peculiar characteristic observable in these seedling beds is a tendency in almost all the plants to produce what are called thrum eyes. Another is that last season's one-year-old plants that were transplanted after they had done blooming are neither so strong nor so well furnished with flowers as those that were left undisturbed. It is, therefore, evident that after the seedlings are once finally transplanted they should not be moved unless they get overgrown, when they should be lifted, divided, and replanted, unless fresh seedlings have been raised to take their place. Border Polyanthuses are, however, not the only ones grown in the Bedfont seed grounds; gold-laced ones may also be found here in excellent condition. These are what are known as true florists' flowers, and, therefore, special care is bestowed on them. They are, however, sown and treated precisely as the border varieties, but the finer kinds are always perpetuated by means of division after they have done flowering and have yielded seed. Among these exists every shade of colour, from velvety black to light red, whilst the form of the flowers and lacings is all that can be desired, the latter being of the same colour as that of the centre, the eyes being all thrums. Any plants deficient in these qualities are marked, and no seeds are ever saved from them. The trusses of these choice kinds are large and handsome, indeed their vigour is little short of that of their more commonplace companions.

Polyanthuses, both of the common and fine kinds, will grow in any good garden soil, but a good loam, enriched with leaf-mould, and a partially-shaded situation, suit them best. At Bedfont, however, they are exposed to full sunshine, the soil there being the tenacious London clay. Thus circumstanced, they, however, sometimes suffer from drought and sharp winds.

Scene at the head of Lake in the Bois de Boulogne (after Alphand). (See page 358.)

FRITILLARIA MELEAGRIS.

In The Garden, a week or two ago, appeared a short notice of that rare wilding, the Pasque Flower, or purple Anemone. That there are many field flowers suitable for cultivation in our gardens, few will, I think, deny; and, as the spring season is the time when our gardens lack beauty, or rather a variety of beauty, and the meadows and hedgerows are ablaze with it, permit me to call attention to two very handsome subjects which would make a marked addition to our spring flower garden. The first is the Fritillaria Meleagris, or common Fritillary, called by the country people "wild Tulip." This plant, which I found in abundance a week ago in a meadow about two miles from Reading, is comparatively rare, and, suitably disposed in our gardens, would form a graceful accession to their limited number of spring-flowering plants. Even in the wild state there are many varieties—the handsomest, perhaps, being the chequered white and reddish purple; there is also a white, or rather greenish white, variety, which is very pretty. The form of the flowers of all the varieties is very much that of a Chinese lantern. The foliage being scanty and Grass-like, the bulbs, to produce an effect, should be massed in close proximity to handsome foliaged plants. The second wild flower to which I would call attention is that of the Caltha, or Marsh Marigold. The meadows near the river have been golden with the yellow blooms of this plant for the past three weeks. Either in masses or isolated, it is an exceedingly showy flower, and has no real defect to prevent its being an eligible occupant of the spring flower border. Its dark green glossy leaves are very handsome, and the plant grows compact and well furnished with blossom in the full sun. Indeed, so splendid was its appearance in the meadows, that I should only have been too pleased to have been able to transfer, there and then, some of its gorgeous beauty to my flower garden; but I was compelled to be satisfied with a handful of blooms, which I gathered, together with some Fritillarias from a neighbouring field, the two forming, on my arrival home, a vase bouquet sufficiently handsome for the *boudoir* of an empress. T. S. Jerrold.

Arundo Donax.—The answer to "East Anglian's" question (see p. 316) is that it is entirely a matter of taste whether the Arundo Donax is more handsome grown as he proposes or cut down each year. But it may interest him to know that he can only get it to flower by not cutting it down. I never saw the flower, though I have often left the stems for two years; but the following note from the "Hortus Collinsonianus" shows that it will flower in England:—"Arundo Donax in flower September 15th, 1762; the first time I ever saw it, but this very long hot dry summer has made many exotics flower. Mr. Miller is greatly mistaken to say that it dies down every year; in my garden the stalks have continued some years to make annually young green shoots from every joint. It bears a handsome tassel of flowers.—P. Collinson."—H. N. Ellacombe.

—— Allow me to inform "East Anglian" (see p. 316) that it is of no use to allow the old stems of his Arundo Donax to remain; the laterals will come to nothing in the way of ornament, and the old stems will greatly impair the beauty and effect of the new ones. As to layering them he can do so, and the side shoots will in some instances root; but he can as easily take them off and strike them in a frame or under a bell-glass out-of-doors. This Arundo, however, grows so rapidly and throws out so many stems from the old roots, that it is hardly worth while to use any other method of propagation than that of division. I have several times tried to throw this magnificent Grass into flower by tying up the stems in straw during the winter, anticipating that they would flower the second year, but with no effect. I have never heard of its flowering in this country. In Madeira, I am told it is magnificent. It should have a barrowful of sifted ashes put over its roots in winter, as it is sometimes killed by severe frosts. Your correspondent should get the variegated sort; it is one of the finest of outdoor ornamental foliaged plants.—J. Scott, *Merriott Nurseries, Crewkerne.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Solanum capsicastrum.—This popular plant forms a showy bush in a sheltered nook in front of a range of glass at Preston Hall, the berries being quite showy. In severe seasons, however, it gets killed down.—M.

Veronica Devoniensis.—This handsome Veronica deserves to be much better known; it is so neat in foliage and so glossy in hue as to be quite pleasing during the winter and spring months, while it flowers abundantly on favourable soils, as at Wimbledon.—P.

Yucca Stems as Supports.—Among the best stakes we have ever seen are the dead flower-stems of Yuccas, nicely branched, and of a convenient height. They are the handiest things one can use for climbing annuals and dwarf or delicate climbers of any kind. Mr. Ellacombe finds that they last three years.

Gentiana acaulis.—Looking at some old beds of this at Preston Hall the other day, lovely with glorious blue, we could not help wondering how it is that such a precious plant is so seldom seen, and where seen so often allowed to struggle half-shaded or half-killed by shrubs and coarser plants. At Preston Hall the small beds of it are fully exposed, and have not been disturbed for years, the result being perfect health and abundant flowers. Plenty of water is given in summer.—R.

Iris pumila, var. lutea.—This was formerly in cultivation, and has been figured in the *Bot. Magazine*, vol. 30, plate 1,209. A few days ago I found it in abundance on the south side of the Paris and Marseilles Railway, three miles west of Entressent station, near Marseilles, where it varies in colour from rich orange to delicate citron, and is associated with the ordinary blue and other coloured varieties. Nothing can exceed the beauty of the large tufts, covered with canary-coloured flowers.—G. Maw, *Benthall Hall.*

Spring Flowers for Next Year.—When should seeds for next year's spring flowers be sown? And will you give a list of a dozen of the best? They would be sown in good ground and transplanted in September.—S. W. [All the perennial spring flowers, such as Polyanthuses, Primroses, Arabis, Aubrietia, Alyssum, Iberis, Viola, &c., should be sown as soon as possible, and we should prefer sowing them in beds in the open air. The biennial kinds of spring flowers, such as Silene pendula, Myosotis sylvatica, Centaurea Cyanus, &c., should be sown about the end of July. The quicker growing annuals, such as Virginian Stock, the Nemophilas, &c., may be sown in September. We shall publish lists of the best spring flowers next week.]

THE KITCHEN GARDEN.

ASPARAGUS.

(*Continued from p. 342.*)

CUTTING.

Asparagus should not be cut till the second year after planting, and then only sparingly. By allowing the plants to get well and firmly established before making a very free use of the knife, and with judicious after-treatment, they will produce excellent crops for many years; and at no time cut too severely, but bear in mind that the more copious and healthy the foliage during the summer, the stronger will be the produce next spring. As the strength of the roots depends on the quantity of foliage, there must be shoots enough left to sustain them healthy and vigorous, and to replace and store up for the following season sufficient matter for the healthy action of the plants. It is not advisable, however, to cut away the strong shoots and leave the smaller ones; quite the reverse. Allow some of the finest shoots to grow after the first fortnight or three weeks' cutting is over, removing any small spray that may appear; for a few strong shoots to each plant, properly exposed to light and air, will be more beneficial than any quantity of small ones. In cutting, a little of the soil is removed from the necks of the shoots with the Asparagus knife, which is then pushed down, carefully avoiding injuring the crown or other shoots that may be pushing up. When the knife is at the base of the shoot, give it a slight twist towards, at the same time pressing it close to, the shoot; then draw it gently upwards, by which process the shoot is separated from the plant. The knife generally used in this operation has a rough or saw-like edge, set to cut only one way, and that by pushing down. It should always be kept sharp at the three or four first teeth from the point. For those that are fond of natural unbleached "grass," any kind of knife will do, and in kindly growing weather the heads may even be broken off without a knife. Asparagus for market is generally blanched by the earthing-up system, which is done by covering the crowns with a few inches of light soil, generally taken from the space between the rows, by which process we obtain the white bleached or blanched shoots daily seen during the season in the London market. When this method is adopted, the shoots must be cut below the surface just as it appears above ground. This mode, however, is not to be commended, the right way being, not to practise the earthing-up system, but to wait till the shoots are 6 inches above ground, when they may be cut over almost level with the surface. By so doing we obtain the Asparagus in its green and natural condition and of exquisite flavour, to which the blanched can bear no sort of comparison. The cutting season should cease about the middle of June, and in no case should it be continued after the end of that month. When green Peas can be had, Asparagus is less required; therefore it is desirable to discontinue cutting after the 10th or 15th of June.

"The waste of good food sacrificed at the fashionable shrine of blanched, stumpy crowned Asparagus is fearful to think of. Here is all the strength of the root run up into a white, leathery skin, with a sweet crown at the end thereof, while we might have 6 or 8 inches of sweeter, better-flavoured eatable "grass" to nibble at and eat quite up. Custom not only makes slaves of us all in various ways, but in the matter of Asparagus it robs us of more than four-sixths of the choicest food. And yet year after year we go on tasting crowns, while we might feed on good-sized stalks. And the latter are positively the best in quality. As long as an Asparagus stem will break off sharp, without leaving tough skin or fibry threadlets behind, it is excellent and sweet for food. Indeed, for soups it is generally used in a green state. The flavour is superb, and it leaves no leathery wreck behind. I wonder what sort of soup the white underground stem would make? or how many crowns it would take to make good soup? The whole system of gathering Asparagus is wrong. First of all, by grubbing underground after the incipient stems, we often cut or wound more than we gather. Even the fleshy roots frequently suffer severe laceration, and then the base that we are so anxious to get is of no use. Connoisseurs, indeed, will tell us that the bottom serves the purpose of a handle. A handle! ah, yes; we hold on by the bottom while we nibble off the sweet crown.

Why not also have a handle to your Cauliflower and Broccoli? A tough Kale stalk would afford a good hold while the crown was divided and discussed with white sauce. But, seriously, would it not be better to cut and serve only edible Asparagus? Nothing can be easier. Simply let it grow 4 inches or 6 inches high, and then cut it off close to the ground; every morsel of it would then be tender and sweet. Of late years I have been gradually getting quietly into this system of culture, sliding into it, as it were, a half an inch at a time, so as not to alarm the kitchen authorities, who are the most inveterate sticklers under heaven for the rights, real or imaginary, of those two great obstacles to improvement—"use and wont." Once safely through the kitchen, the green Asparagus is safe; it is so much appreciated in the higher regions that little of it returns, and one hears cheering reports of its full-bodied flavour and unusual sweetness and crispness along its entire length."

To the above remarks, for which I am indebted to Mr. Fish, it may be well to add that those who eat and know most about Asparagus greatly prefer it in the partially blanched condition.

FORCING ASPARAGUS.

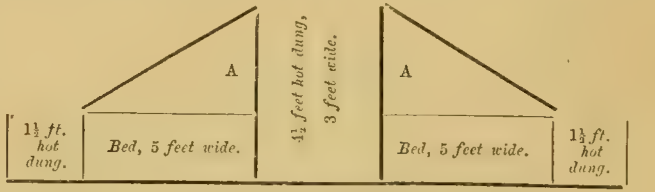
There are several ways of forcing Asparagus, all depending on the same principles, yet each adapted to a different kind of garden. Some are expensive, others not at all so, where stable manure is plentiful and garden labour not a scarce commodity. In my days in the London market gardens a large forcing grower would purchase an acre or more from the grower, and send for it as his beds were made. I have frequently sent several waggon-loads of roots away in one day to forcing gardens on the opposite side of London, where they used to supply it in good condition from Lord Mayor's-day till it came up naturally in the open garden the following spring. At that time heating hothouses or pits of any kind by means of hot water was of course unknown. They employed a great number of common garden frames. A trench a foot or so wider than the frame and 15 inches deep was then cast out, and in this was placed about 2 feet of London stable manure, and on this again a few inches of the rich friable earth of the old market garden which had been cast out of the trench, to secure the heat from evaporating. Then soon after the frames were placed in a straight line on the hotbed, the plants were very carefully placed on the soil in the frame, covering them immediately with 3 or 4 inches more soil, or more if the Asparagus was required blanched throughout. If wanted quite blanched, of course air and light were not admitted. Every twenty-four days or so a fresh set of beds was made to keep up the supply.

Forcing may be commenced in November and continued till Asparagus is fit to gather in the open air. One of the best ways is to make a slight hotbed with stable manure, leaves, tan, &c. (these last materials, if easily obtained, will do well to mix with the manure), in a Melon pit, or under a common Cucumber frame. Two and a half feet high will be quite sufficient, and on the surface of the bed should be placed a few inches of light soil, leaf-mould, or sifted potting refuse, on which to place the plants, because such material does not act so decisively in repressing the heat as ordinary garden soil; and when the roots are taken up as completely and carefully as possible and placed thickly on this, they should be covered with a few more inches of the same material. If the Asparagus be required of its natural colour—and that is unquestionably the best way to enjoy it—give the frame full light and air when fine. Water occasionally with tepid water. After one good watering in the early stage, little will afterwards suffice for the winter crops, at all events, as the slow evaporation of the period and the natural moisture of the bed will preserve the soil in a nice moist state. The heat of the bed must be preserved when it gets low by a lining, in the usual old-fashioned way, by covering closely with mats or litter at night in cold weather—that is, if it be a common frame, but if in a brick pit this will not be necessary. The chief point is to be patient at first, to let it get a slow start, and not be over excited at any time, or it will start away and produce nothing but very weakly, spindling shoots; whereas, by bringing it on gradually and regularly, a really respectable cutting may be obtained.

It is also frequently forced by being placed on the floor, or on a bench or pit of some kind, in an early vinery or other forcing house; and, whenever there is space to spare, and the heat brisk and genial enough, this is a good plan. Another very important way is by bringing the heat to the roots, and certainly by this plan a more permanent and stable kind of "grass" is obtained, because plant or root is not in the least disturbed. But it is an expensive way, though simple. The beds are in the first place very well made of rich soil, deep, too, and the alleys of these beds are dug out to a depth of 3 feet or so, and then bricked; or, in other words, the Asparagus beds are made between low brick walls, perforated with "pigeon holes," to admit of the heat entering freely; and whenever forcing commences, the bricked trench on each side of a bed is filled with fermenting manure, covered over by a rough shutter, and the beds themselves with small wooden frames made to fit; these are, of course, only placed on during forcing, the beds being exposed in the summer season. The beds should not be more than 4 or 5 feet wide, to admit of the ready percolation of heat. This method is, however, only suited for places where a good deal of expense is devoted to the garden; and the modification or improvement of it, which consists in having hot-water pipes pass between each bed and the chamber covered with a slab of stone, is a much more expensive one. No matter what system be employed, a steady heat of from 60° to 65° will be found most suitable.

Another way of heating the beds is by means of hot-water pipes. This is a modification or improvement of the last, and is the same as is practised in the Royal Gardens at Frogmore. This is certainly a very expensive method; yet it must be admitted it is the most satisfactory in the end. At Frogmore the beds are 75 feet long and 7 feet wide, their sides being built with brick, "pigeon-hole" style. The spaces between the beds are 4 feet deep, the lower 2 feet being filled with rich soil; and in the upper 2 feet are a flow and return hot-water pipe connected with a boiler that heats six such ranges. On the top of the beds are special frames. In severe weather, the sashes must be covered with mats or litter.

Mr. Gilbert's mode of forcing Asparagus is clearly illustrated by the annexed diagram, and it is that adopted to a great extent in the market gardens. The beds are 5 feet wide, with 3-feet alleys between them. The alleys are dug out to the depth of 2 feet, the soil being spread over the surface of the beds, on which frames, covered with sashes, boards, or shutters, are placed. The space between the beds, being 4½ feet deep and 3 feet wide, is filled with fermenting material, such as stable dung and leaves, as are also the outside half alleys. Before filling these spaces with litter, we make holes into the sides of the beds large enough to admit a one-inch bore drain-pipe. These holes we find beneficial in admitting heat to the interior of the bed. The side trenches are filled with hot dung to the height of the frames, the beds in which, marked A A, are also covered with the same materials until the heads make their appearance, when it is removed. If white Asparagus is wanted, the frames are kept dark by being covered with shutters; but, if green is preferred, glazed lights should be put on. After the fermenting material is removed from the beds, the frames are kept close for a few days, after which a little air is given on favourable occasions, a practice which increases both flavour and quality. It is necessary to maintain a temperature of 60° or 65°, but at no time should it exceed 70°. When this heat cannot be kept up, fresh linings must be added.



Section of two Beds with Alley between them, and half of two corresponding Alleys.

Jas. Barnes.

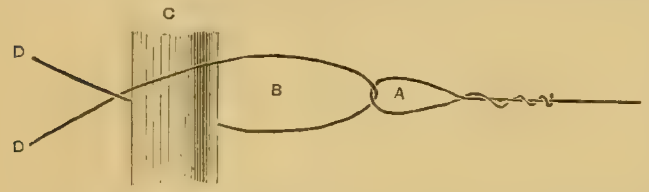
(*To be continued.*)

The Canada Victor Tomato.—Mr. J. H. Gregory, of Marblehead, Mass., a trustworthy observer and large grower of Tomatoes, reports that this is the earliest Tomato he has ever tried by from six to eight days. Its other qualities are also of a high order. We are not aware that it is yet to be had in England.

GARDEN STRUCTURES.

RAIDISSEURS SUPERSEDED.

A great many contrivances for tightening wires have been offered to the horticultural public. They are all more or less ingenious, and answer the purpose required; but they are all more or less expensive, and economy of time and money is the great desideratum in horticulture more than in any other pursuit. M. Jean Sisley, of Lyons, sends us the following: "A gardener of our city—M. Ravet—has invented the following most simple, most economical, and most effective mode of tightening wires. On the wire to be tightened he makes a loop A (as in the figure), through which he passes a piece of wire (B), which he turns round the pole C, to which the wire is to be fixed, and with a pincers he twists the two ends (D) till the wire is tightened. This invention supersedes all the much extolled contrivances called French raidisseurs, &c."



LIME KILN HEATING.

With reference to Mr. Cowan's plan of heating by means of lime burning, of which we gave an illustration and description last week (see p. 347) from notes made on the spot by Mr. Noel Humphreys, we gladly republish from the *Gardeners' Record* the following confirmatory testimony as to its merits by Mr. Roberts, of Charleville, who is one of our very best Grape growers, and altogether a skilful gardener and painstaking observer:—

I have had (he says) an opportunity of inspecting this system. The first object of attention was a lime kiln, I will say No. 1, with boiler attached. This is the first one which Mr. Cowan erected. It heats several detached houses, with both bottom and top heat, and there cannot be a doubt about its efficiency. The pipes were regularly heated, and hot all through, and this for twenty-four hours, without any attention to the kiln. The next kiln which I examined I will call No. 2. It is larger than No. 1, and, with its boiler, heats a grand range of houses 200 feet long in several divisions, in which over 1,000 feet of piping are in constant use. I saw the work of drawing the lime burned in the twenty-four hours, the quantity taken out, and the quantity of small coal or slack, and the necessary quantity of broken limestone used to complete the charge for another twenty-four hours. This "charge," shall I call it such? was made at about eleven o'clock a.m., and at six p.m. I examined it, and found on opening the furnace door a grand heat, which very much put me in mind of the glow of fire one sees in a railway locomotive engine when the doors are first opened. All the pipes were regularly heated, and as hot as scarcely to be bearable to the hand. At eleven o'clock on the night of the day of charging I again examined the kiln, and all was burning up to the desired height in the kiln, and that, be it remembered, since eleven o'clock a.m. I then proceeded to try the piping, and found all satisfactory—the houses being heated up to just 27° above the outside temperature. This was very satisfactory, and I retired to rest. Next morning, after breakfast, I again made another inspection, this being the fourth since (I was going to say) "making up time"—charging at eleven o'clock a.m. the previous day. The glow in the kilns was just as bright as it was over-night, and the heat just as steady in the houses. I left Mr. Cowan perfectly satisfied with his new system, and congratulated him on his happy hit, wondering much how stupid I was that I could not have invented such a simple contrivance myself.

Some, I have no doubt, will say, "What about the cost of the apparatus, &c.?" Well, to be candid, I did not go into those matters with Mr. Cowan; though I am sure, if I had wished, he would have given me every particular in that respect.

I saw the lime taken out (this is done every twenty-four hours—bear this fact in mind; your stoking can be done during the day; and, once charged, it is continued by renewing every twenty-four hours), and it was of the best description—good, nice-sized lumps. I saw the slack or small coals used, and I was assured and convinced by Mr. Cowan that the value of the lime made more than compensated for the cost of fuel and labour in procuring stones, breaking, &c. Where limestone exists in abundance, as it does here, the heating of hothouses will be a paying instead of a losing game to the owners. I, for one, have to thank Mr. Cowan for his inventive powers. His system will, I am sure, answer admirably at Charleville, for here we have plenty of limestone, and we certainly are always wanting lime. I shall strongly recommend the principle to my noble employer, and I expect in a year or two hence I shall be told to "fire away, we want more lime." Won't that be a much more pleasant sound than "reduce your forcing; the cost of coals is something enormous?"

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—Spring flowers, such as Pansies, bedding Violas, Daisies, Aubrietias, Forget-me-Nots, Alyssums, single and double yellow and crimson Wallflowers, Trillium grandiflorum, Trolliuses, Saxifrages, Tulips, &c., are now in perfection, whilst fine-foliaged plants are beginning to be extremely pretty. Preparation must now be made for summer bedding plants; all beds, therefore, not occupied by spring-flowering plants should be lightly dug, levelled, and otherwise made ready for planting; a dressing of leaf-mould is sometimes of much service, especially for Pelargoniums, and in the case of Alternantheras and other plants with highly-coloured leaves, peat has been found efficacious in bringing out the variegation. Edgings of Echeveria secunda glauca and others, together with Sempervivums of various sorts, should be made at once, for, if properly hardened off previously, they will stand a slight frost with little harm. Funkias have now begun to grow, and, if necessary, may be lifted, divided, and replanted. Remove from beds of Cannas, in which the roots were wintered in the open ground, the mulching of leaves, litter, or Grass with which they were covered, as the plants have begun to grow, and the beds should be top-dressed with some well-decayed manure and loam. Spiræa filipendula makes a fine summer edging for beds, and it may now be transplanted, as may also variegated Grasses, for the same purpose. Polemonium cæruleum variegatum, variegated Arabis of different sorts, autumn-sown plants of the golden-leaved Feverfew, Japanese Honeysuckle, and bedding Pansies and Violas. Carnations wintered in pots should now be planted out and staked; also Hollyhocks propagated this spring. The commoner Yuccas wintered in frames may now be consigned to the open borders, as may also Pentstemons, Phloxes, Antirrhinums, and Irises. From the base of clumps of Pampas Grass cut away the most decayed leaves, and administer a thorough soaking of water to the roots. Campanula carpatica may be divided and replanted; this makes a grand edging for a shrubbery border, as does also the Nepeta violacea, the herbaceous stalks of which should be removed so as to give freedom to the young growth. Lift, divide, and transplant Neapolitan and other early blooming Violets in a somewhat shady border; place some sandy soil around the roots of each plant, and water them freely when necessary; good year-old plants always make the best flowering ones. Sow Polyanthuses and Alpine Auriculas at once on a warm border, and divide and transplant the old ones as soon as they have done flowering in a somewhat shaded border; they thrive well in a good loamy soil mixed with leaf-mould; it is, however, unnecessary to disturb the old stools unless they have become overgrown. Wallflowers may still be sown, but the earlier now the better. Pansy seed may also be sown, cuttings propagated, established plants transplanted, and the seedlings from sowings made early in April in boxes or frames pricked out or planted permanently. Suckers should be removed from Roses, and any buds that appear on the stems of standards should be rubbed off from last year's budded Roses too; remove all shoots and eyes except one beyond the bud, which should be left to draw up the sap until the inserted bud has strength enough to perform that office for itself, when the other shoot should be gradually reduced and eventually removed. Look after Rose grubs and other pests, to which the Queen of flowers is liable.

Shrubberies.—Young bright-green leaves and opening blossoms render these always attractive at this season of the year. Amelanchier and Cherry flowers are now almost past; but Berberries of different kinds are now in good condition, as are also Apples, Pears, flowering Currants, Magnolias, Laurustinus and Japanese Quinces. The dwarf Almond, too, is now in full beauty, and forms a fitting associate for small plants of Prunus triloba and sinensis, and the Rosemary. These will soon be followed by Hawthorns, Chestnuts, Cotoneasters, Spiræas, tree Pæonies, and several other shrubs, as well as by masses of Rhododendrons, &c. Shrubbery borders, if not previously done, should now be lightly dug or hoed. Unnecessary suckers should be removed; for, in the case of flowering plants, not only do suckers look untidy and rob the trees, but the shrubs, encumbered in that way, never flower so freely nor produce such good flowers as they would do without them. Maintain neatness in every way by a frequent use of the broom, hoe, rake, and mower. Have walks in good trim, and apply fresh gravel if necessary; use the roller frequently on them in damp weather.

Bedding Plants.—The coldness of the weather has considerably retarded the progress of bedding plants, and has called for more than usual attention to keep them in good condition; consequently they are not so well hardened off as they usually are, thus rendering the bedding-out season this year a little later than it commonly is. Pelargoniums of all sorts, for planting out, should be gradually inured to the weather, and the hardier kinds all but fully exposed. Unless between hedges, under canvas, or beneath the canopy of some densely topped trees, it would be dangerous yet, however, to risk them out of frames or pits. Old stumps of Fuchsias may safely be planted out and staked, but those started into growth indoors must be kept there until the weather becomes warmer. Centaurea ragusina, if required for specimens to be set in a carpet-work of Lobelias or other plants, had better be plunged in the pots; they may now be placed in open frames. Cineraria maritima, pricked out in frames or potted, should have the sashes tilted up in front and at back. Centaureas now strike freely from cuttings, therefore a stock of them should be secured. Boxes, pans, or pots containing Gazania splendens, may be arranged out-of-doors along the base of a wall or hedge in a well-sheltered position. Pot off the youngest lot of Verbenas, Ageratums, Tropæolums, Lobelias, &c.; keep them in heat for a week or so until they begin to grow again, and then remove them to a cool house or close frame, and gradually harden them off. Propagating Dahlias for ordinary use should now be at an end. Established cuttings and divided roots making growth should be removed to a cold frame, which should be kept close for a time, but eventually thrown open. Keep Perilla in a cool frame, and plant out Dell's Crimson Beet where it is to remain. Alternantheras, Iresines, Coleuses, and Amarantuses, keep rather warm yet, and encourage good stocky growth. To these Fuchsia Meteor makes a fine companion, and from early spring-struck cuttings nice plants of it should be had for bedding-out. Sweet Peas, Tropæolum canariense, and climbing Nasturtiums, may now be planted out from the pots or boxes in which they were sown; they are sometimes raised in narrow wall borders, and afterwards transplanted. Stocks, Asters, Balsams, Tagetes, African and French Marigolds, Brachycome iberidifolia, and similar plants, if in boxes, should be kept in frames, and the sashes should be tilted up both at back and in front; the Marigolds may be pricked out and kept in a warm position for another week or so if necessary. Supply sub-tropical plants freely with water at the root, and syringe them twice a day; a sprinkling of tobacco water from the syringe now and then helps to keep them free from greenfly and thrips, and is essentially useful in the case of soft-wooded plants. Gradually reduce the artificial heat where sub-tropical plants are kept.

Indoor Fruit Department.—For Pines maintain a steady night temperature of from 70° to 75°, allowing a rise of 10° throughout the day. Transfer such plants as are beginning to ripen to a cool part of the pit and keep them moderately dry at the roots. Slightly syringe all pot plants at shutting up time, also such as are planted out; a sprinkling from the waterpot, however, is generally sufficient for them. The early Fig crop on plants or borders has been rather unsatisfactory, but the second one promises to be good. Keep shoots of Figs well spread out, and pinch all young shoots at the fourth joint. Plenty of water should be given; weak manure water should be occasionally applied, and the plants should also be well syringed. In early Vineries, in which Grapes are ripe, the temperature should be moderately low and the atmosphere comparatively dry. Continue to tie in young shoots and stop laterals in the succession houses. Admit plenty of air to Cherry houses, and keep up a moderately moist atmosphere by sprinkling the paths and floor; as the fruit approaches maturity, gradually lessen the amount of atmospheric moisture and the supply of water at the root. Tie in shoots of Peaches and Nectarines in the latter houses, but avoid overcrowding, and freely syringe the trees. Remove any leaves that shade the fruits, in order to increase its colour and flavour. Fumigate if greenfly is troublesome, and mix some flowers of sulphur with the water for syringing in order to keep down red spider. Keep the syringe well at work amongst Melons and Cucumbers, and do not permit too much lateral growth to be on the plants; better have a moderate quantity of good foliage than a mass of indifferent leaves. Introduce successions of Strawberries from pits. Maintain a good supply of French Beans in heat, and harden off Tomatoes in cold frames for planting out. Plant out Vegetable Marrows under handlights in warm positions, and on manure heaps.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

(May 7.)

This, though not one of the Society's large shows, was nevertheless one of great interest. Roses, Azaleas, and Orchids formed the principal part of the exhibits, yet many things of a miscellaneous character were also shown.

Roses.—These were exhibited in wonderfully fine condition by Mr. C. Turner—perfect models as regards cultivation. They were shown six in one class and twelve in another; they were fully 6 feet in diameter, each specimen being laden with some five or six scores of fully expanded flowers, besides a multitude of buds. To these were deservedly awarded first prizes in the classes in which they were shown. They consisted of Maréchal Vaillant, La France, Miss Ingram, Victor Verdier, Madlle. T. Levet, John Hopper, Souvenir de la Malmaison, Souvenir d'Un Ami, Charles Lawson (fine), General Jacqueminot, Alfred Colomb, Mad. de St. Joseph, Paul Verdier, Celine Forestier (fine), Beauty of Waltham, and Anna Alexief. A dozen fine specimens of Roses were contributed by Messrs. Paul & Son; conspicuous among them were Juno (fine), Marie Baumann, Mad. Victor Verdier (splendid colour), Horace Vernet, and Elie Morel. Messrs. Paul & Son exhibited moreover a superb collection of cut blooms, which were awarded a first prize. In the amateur's class, Mr. E. Ellis, Coombe Warren, Kingston Hill, was first, and Mr. James, Isleworth, second; the plants in both these collections were large and fine. In the class of twenty new Roses of 1870, '71, and '72, in 8-inch pots, Messrs. Paul & Sons were first, Mr. Turner second, and Messrs. Veitch & Sons third. Those in the first prize group, all of which were well grown and flowered, consisted of the following, viz., André Dunand, Richard Wallace, Mad. George Schwartz, President Thiers, Lyonnais, Etienne Levet, climbing Victor Verdier, Coquette des Blanches (a pretty pure white), Annie Laxton, Baronne Louise Uxkull, Baronne de Prailly, as Hybrid Perpetuals; and of tea-scented ones there were Perfection de Montplaisir (superb buds of a bright canary-yellow colour), and Cheshunt Hybrid (extremely fine).

Azaleas.—These consisted of large bushes and small plants, the finest blooms being on the latter. Mr. Turner was first for the best single specimen, with an immense white-flowered kind. Mr. Ward, of Leyton, was similarly placed in two classes for three distinct kinds, consisting of Flower of the Day, Madame Miellez, and Sinensis, in one case; and Louise Margottin, Duc de Nassau, and Sinensis in the other. Other exhibitors were Messrs. Dobson, Wheeler, Hill, Slogrove, Rowe, and Marcham. A group of Azaleas from Messrs F. and A. Smith, of Dulwich, contained some good kinds, particularly a fine white sort, called Beauty of Surrey.

Orchids.—Of these there were some fine groups, and also severa novelties. Mr. Ward showed half-a-dozen grand specimens of Lycaste Skinneri, and a group containing a splendid specimen of Phalænopsis grandiflora, a large and well-flowered plant of Oncidium ampliatum, a specimen of Dendrobium Farmeri, with eleven flower-spikes on it, and a fine plant of Cypripedium villosum. Mr. Wheeler showed half-a-dozen plants of Lycaste, consisting of Skinneri, cruenta, and Harrisoniæ. From Mr. Denning, gardener to Lord Londesborough, came some excellent Orchids, amongst which was a plant of Aerides Veitchii, with one flower-spike, on which were eleven well-developed branchlets; a finely-bloomed specimen of Dendrobium infundibulum, a good plant of Cattleya Mendelii, and one of Mossiæ, a finely-flowered specimen of Cyrtopodium punctatum, several Vandas, a fine mass of Oncidium bifolium, and superb plants of Odontoglossum Phalænopsis, and Saccolabium guttatum, curvifolium, and ampullaceum. Of Odontoglossum Phalænopsis, a most excellent specimen was exhibited by Mr. T. Hubbersty, Bridge Hall, Bury. It measured over 2 feet in diameter, and was laden with flowers; last year this plant was awarded the Lindley medal. From Messrs. Veitch & Sons came, however, the gem amongst Orchids, in the shape of Odontoglossum vexillarium, bearing two flower-spikes, each having four delicate violet peach-coloured flowers. The same firm also sent an extremely handsome new Masdevallia, M. Harryana, a fine plant of Cypripedium Dominianum, finely-flowered plants of Camarotis purpurea, Dendrobium Devonianum, Saccolabium curvifolium, &c., together with some fine-foliaged plants. Mr. Wm. Bull contributed excellent plants of Arpophyllum giganteum, Cypripedium superbiens, Odontoglossum crispum, several Vandas, Lycastes, and others. Messrs. Rollisson furnished a splendid plant of Saccolabium ampullaceum moulmeinense, a nice specimen of Calanthe Rollissonii, with two fine spikes of bluish flowers; a good specimen of Oncidium sphacelatum, some Cattleyas, Phalænopsis, and others.

Miscellaneous Plants.—From Mr. W. Bull came a large and varied collection of plants, amongst which were Elæocarpus reticulatus, a fine white-flowered tender shrub; a grand plant of Cochliostema Jacobiana, with half a dozen flower-spikes on it; a nice plant of Richardia maculata in flower; a good specimen of Amorphophallus campanulatus, a large plant of the beautiful Alocasia illustris, and plants of the pretty variegated Aralia Guilfoylei, Ravenala amazonica, Cyrtodeira fulgida, Anthurium Scherzerianum, and others. Messrs. Veitch contributed a basketful of the splendid Spiræa palmata, whose attractive red flowers and hardiness of constitution must ever render it a great favourite. Mr. Noble again sent a fine collection of Clematises. Messrs. Rollisson furnished a large mixed group of plants, containing some good Palms, Conifers, Heaths, Eriostemons, &c., for which a first prize was awarded. Messrs. F. & A. Smith sent a group of hard-wooded greenhouse plants in flower, and Mr. J. Aldous a fine group of fine-foliaged plants, Palms, Conifers, Dracænas, &c., for which an extra prize was awarded. Mr. Wheeler sent a collection of stove and greenhouse plants; and Mr. J. Welch, Hollycomb Gardens, Liphook, Hants, a few examples of the extremely prettily-variegated Habrothamnus Hawkshaurianus. Veronica Hulkeana was contributed by Mr. Macintosh, nurseryman, Hammersmith. Dracæna rubra, a finely bloomed example of Anthurium Scherzerianum, called Hendersonii, some tree Carnations, and Caladiums were shown by Messrs. E. G. Henderson and Son. A fine boxful of cut flowers of stove and greenhouse plants, and a beautifully crisped form of Athyrium Filix-fœmina virgatum came from Mr. J. Chambers, Beddington; a group of seedling Echeverias was furnished by Mr. Webster, Gordon Castle; a seedling Gloxinia by Mr. Gordon, Wimbledon; and some seedling Pelargoniums by Messrs. Smith, of Dulwich. Messrs. Barr and Sugden sent some plants of the extremely pretty and quite hardy Cotyledon spinosum; W. B. Kellock, Esq., Stamford, furnished a plant of Phyllanthus latifolius; Mr. J. Douglas, Loxford Hall, sent an excellent rosy-lilac flowered seedling raised from Statice armeria speciosa; Dr. Denny furnished some very fine-flowered zonal Pelargoniums; and Mr. Goddard, Richmond, half a dozen fine specimens of Mignonette. A large group of well-coloured tricolor Pelargoniums was furnished by Mr. Pestridge, Greenway Nurseries, Uxbridge; and a large collection of succulents, composed of Gasterias, Echeverias, Sempervivums, Opuntias, Aloes, Mammillarias, and other plants were sent by Mr. Ware. From Chiswick came a great quantity of cut flowers of red Camellias that had been cut from plants grown in the open air.

Florists' Flowers.—Messrs. Dobson & Sons sent a fine collection of herbaceous Calceolarias, for which they were awarded an extra prize, also a second prize for half a dozen plants, Mr. James being first, and Mr. G. Warren, Willesden, third. A group of fine specimens of Cinerarias was furnished by Mr. W. Lacy, Wigmore Park, Dorking, an extra prize being awarded for them, and another collection with large and well coloured flowers came from Messrs. J. Standish and Co., who also sent a specimen of the white-flowered Abutilon Boule de Niege. A collection of gold laced Polyanthuses, for which an extra prize was given, and a remarkable double, or rather Carnation-flowered Polyanthus, having the gold lacing well marked, were sent by Mr. J. Goddard, The Retreat, Richmond. Of Alpine Auriculas a splendid collection was furnished by Mr. Turner. For the best twelve Alpine, and also for the best twelve show Auriculas, Mr. Turner obtained first prizes. Mr. James, Messrs. Dobson, and others also showed in these classes. A very fine collection of cut flowers of fancy and English Pansies, and plants in pots was exhibited by Mr. Bragg, of Slough; collections of the same were also furnished by Messrs. Dobson & Sons and Mr. Ware.

Fruit and Vegetables.—A collection of Apples was shown by Mr. W. Gardiner, Lower Eatington Park, Stratford-on-Avon. They were in a state of good preservation, and were awarded a cultural commendation. Conspicuous amongst them were Hanwell Souring, Gloria Mundi, Broad-eyed Pippin, Grosse Reinette d'Angleterre, Northern Greening, Bess Pool, Corsehill, Forester, Nonpareil Scarlet, Yorkshire Greening, Alfriston, Round Winter Nonsuch, Greenup's Pippin, Rymer, Royal Russet, Adam's Pearmain, Lewis' Incomparable, Dutch Mignonne, &c. Some excellent Dr. Hogg Strawberries were shown by Mr. Hopper, Hartwell House, Bucks; and Alice Maud, by Mr. W. Stevens, Chesterford Park, Essex. From Mr. Jones, Royal Gardens, Frogmore, came clusters of Black Hamburgh and Buckland Sweetwater Grapes from pot Vines one year old; also specimens of the Hedsor Cucumber, which in the Royal Gardens is regarded as the best Cucumber for general purposes, especially for winter work. A cultural commendation was awarded to Mr. W. Coles, gardener to W. K. Wigram, Esq., The Chestnuts, St. Margaret's, Twickenham, for some good Pears. Messrs. Hurst & Son, Leadenhall Street, exhibited a brace of Telegraph Cucumbers, and also one of Munro's Improved Rabley, which is an excellent free bearing variety. Messrs. Waite, Burnell, Huggins, & Co. exhibited some fine heads of Taylor's Yorkshire Hero Broccoli, which were large, firm, and very fine; and Mr. A. Parsons, Danesbury Park, Welwyn, showed some of Saunders' protecting late winter Goshen Broccoli, the heads of which are very large. Of Northampton Hero Broccoli, Messrs. Watts & Son, of Northampton, staged some excellent heads. Of the Leamington Broccoli, Mr. Perkins showed some heads which were large, white, and solid. Baskets of excellent samples of Carter's First Crop Peas were contributed by Mr. S. Farrow, Brigadier Hill House, Enfield, and by Mr. G. Brown, Fawley Court, Henley-on-Thames.

First-class Certificates.—These were awarded to the following:

Sempervivum triste (Veitch), a pretty dark-leaved kind.

Phœnix rupicola (Veitch), a graceful Palm.

Platyloma brachypterum (Veitch), an extremely pretty little Fern.

Platyloma bellum (Veitch), somewhat like the former, but dwarfer.

Odontoglossum vexillarium (Veitch), somewhat in the way of O. Phalænopsis, but much larger, and of a delicate peach colour—a gem amongst Orchids.

Masdevallia sp. (Veitch, and Denning), one of the most brilliantly-coloured of the genus—a fiery crimson.

Pelargonium White Clipper (Denny), an excellent white-flowered zonal kind.

Colax jugosus (Bull), a pretty Orchid, the sepals of which are creamy white, and the petals and lip striped and spotted with violet.

Begonia Sunrise (Bull), a nice crimson-flowered herbaceous kind.

Azalea Apollo (Turner), flowers large, white, faintly streaked with red—an excellent variety.

Auriculas C. Perry, Cantab, Rev. A. Matthews, and others (Turner).

Auricula Charles E. Brown (Dombrain).

MR. W. PAUL'S ROSE SHOW, SOUTH KENSINGTON.

Never before has such an extensive exhibition of Roses in pots as this been made by any one firm; and, tastefully arranged as they were, on the well shaven grassy terraces of the show ground, under the large tent in which the society's summer shows are held, they were seen to excellent advantage. Nor did the exhibition consist wholly of Roses, for the Queen of flowers was effectively intermixed here and there with standard Bays and Rhododendrons, double-flowered crimson Hawthorns, variegated and other ornamental-leaved Oaks, the white Acer Negundo variegatum, Ivies in great variety, early blooming Clematises, and in the centre stood a large specimen of Araucaria excelsa. By the sides of the walks were placed at intervals plants of variegated Euonymuses, Golden Thyme, Lily of the Valley, variegated Elders, and several kinds of bicolor, bronze-leaved, and tricolor Pelargoniums. A bicolor Pelargonium with foliage well variegated with white, and fine white flowers, was particularly remarkable, and conspicuous amongst the golden-bronze kinds was Waltham Bronze. The Roses consisted of large beautifully flowered specimens and intermediate and small-sized plants, but throughout the whole the blooms were remarkably large and bright, every plant being, as it were, overladen with them; the foliage too was abundant and fine. General Jacqueminot and Senateur Vaisse were particularly striking, as was also Duke of Edinburgh. Camille de Rohan was smothered with dark crimson velvety flowers, those of Princess Beatrice were large and full; and Coquette des Blanches, Perfection de Montplaisir, Marquise de Mortmart, and others, were likewise conspicuously beautiful.

COVENT GARDEN MARKET.

May 9th.

Good English grown indoor fruits are somewhat scarce, with the exception of Strawberries, which are sufficient for the demand. New Grapes and Pines have not improved since our last report. Figs and Peaches now begin to be supplied in tolerable abundance, and the first instalment of French Apricots has arrived this week. Cucumbers are good and moderately plentiful.

Prices of Fruits.—Apples, per half sieve, 3s. to 5s.; Apricots, 2s. to 3s. per doz.; Cobs, per lb., 2s. to 2s. 6d.; Cherries, per box, 4s. to 8s.; Gooseberries, per quart, 1s. to 2s.; Grapes, hothouse, per lb., 10s. to 18s.; Lemons, per 100, 6s. to 10s.; Oranges, per 100, 6s. to 12s.; Peaches, per doz., 18s. to 36s.; Pears, kitchen, per doz., 1s. to 3s.; dessert, per doz., 6s. to 18s.; Pine-Apples, per lb., 8s. to 12s.; Strawberries, per oz., 9d. to 1s. 6d.; Walnuts, per bushel, 15s. to 30s.; ditto, per 100, 2s. to 2s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100 5s. to 10s.; French, 4s. to 10s.; Beans, Kidney, per 100, 1s. 6d. to 2s. 6d.; Beet, Red, per doz., 1s. to 3s.; Broccoli, per bundle, 9d. to 1s. 6d.; Cabbage, per doz., 1s. to 1s. 6d.; Carrots, per bunch, young, 1s. 6d., old do., 8d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 2s. 6d. to 4s.; Cucumbers, each, 6d. to 2s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 2d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 5s. to 8s.; pickling, per quart, 6d.; Parsley, per doz. bunches, 6s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 3s. to 6s.; Potatoes, per bushel, 5s. to 10s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Savoys, per doz., 2s. to 3s.; Scorzonera, per bundle, 1s.; Seakale, per basket, 1s. to 2s.; Shallots, per lb., 8d.; Spinach, per bushel, 3s. 6d. to 5s.; Turnips, old, per bunch, 3d. to 6d., young do. 2s.

ANSWERS TO CORRESPONDENTS.

Forget-me-Nots (J. L.).—Your plant, now blooming in profuse masses round your Rhododendrons, is the true Myosotis dissitiflora.——Asparagus (J. B.).—Now, when somewhat warm showery weather has set in, your seeds, which have hitherto remained in the ground dormant, may be expected to start into growth.——Crown Imperial (J. J.).—Your specimen is a monstrosity, consisting of two or more flower heads united on the top of a fasciated stem.

THE GARDEN.

> "This is an art
> Which does mend nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

THE PURPLE BEECH AND FILBERT.

Form, lines of grace, and curves of beauty arrest attention; but colour fills the eye and gratifies the senses. Garden scenery is brightened immensely by means of colour. The leaves of the new-born summer, the matured ones of autumn —how much they owe to delicate and multitudinous colouring! But for fresh tenderness of touch, that neither painting nor word colouring can reproduce, commend us to the bursting buds of April—the newly unrolled beauty of May leaves. Among these, what more beautiful than the Beech and the Hazel or purple-leaved Filbert? There are two or more varieties of each, one larger and of more substance than the other. In fact, of the Beech there are many varieties, for the red reproduces itself from seed, and in a batch of seedlings there are tints of many degrees, ranging from dull greens up to those of almost fiery glow. We have, however, never yet seen a seedling to equal in brilliancy the common variety, which is mostly increased by grafting it on the common Beech; and another with larger leaves, that keeps its colour later in the autumn. It must also be borne in mind that in sowing purple Beech mast only a certain, or rather a most uncertain, per centage will come true and near to the original. At times ten, at others twenty, and sometimes not more than from one to five per cent. of the seedlings will be purple. We have not tried raising the purple Hazel from the nut, but probably similar results would be obtained as to the diversities of purple. But purple Filberts are easily multiplied by means of suckers—a mode of increase not always to be depended upon in purple Beeches on their own roots. Beeches seldom produce suckers, yet they occasionally throw little bunches up from the surface roots, and I have seen these green on purple seedlings, and purple on grafted plants—rather a singular circumstance. The Filbert is also so fully purpled over and through that we never remember to have seen it throw out a green sucker. It is most useful in shrubberies, contrasting admirably with such plants as Berberises, Lilacs, Laburnums, Hollies, Box, Laurels, Guelder Roses, Deutzias, &c. It seems actually to glow with the intensity of its colouring, and is to the fore and middle ground of shrubberies what the taller Beech is among other trees. The Beech has a soft fluffiness and semi-transparency about it that the Filbert, glorious as it is, lacks; and the richest colouring treat—a very feast of glowing magnificence—is spread around every far-reaching purple Beech. One of the best modes of enjoying it to the full is to put the trees between the beholder and the sun, and look through the leaves towards him soon after he has risen, or a few hours before his setting. The purple is thus flooded with golden magnificence, and each leaf and branchlet is set off to admirable advantage. Purple Beeches are especially rich as foreground to masses of green Oaks, Elms, or other deciduous trees; or set against Larches, Birches, or Limes, the light foliage of these or the flowers of Service trees, wild Crabs, Pears, Apples, &c., give a deep tone to the glowing purple. Further, the young leaves, especially, contrast admirably with Deodars and Cedars of Lebanon, and most Conifers; though it must be admitted that the darker hues of the purple Beech in autumn become too sombre accompaniments for most Pinuses. The place for the purple Beech is the background of shrubberies, home plantations, belts, the park, and even the woods and forests; for the purple Beech is not weakened by its colour. It grows as fast, and forms timber neither better nor worse than any other Beech, and assuredly its more general use would give a glow to forest scenery that would add much to its beauty, and to the breaking of its dead monotony of colour as well as form. Clumps of purple Beech here and there would change the face of our English landscapes, and render them more agreeable without their being one whit less profitable. What with our want of direct sunshine, and our dripping clouds, and leaden skies, we have often a deficiency of cheering colour, and there could hardly be an easier and cheaper method of supplying this want than the planting our copses with groups of purple-leaved Filberts, and our woods with purple Beeches.

THE GREAT FINCHLEY VINE.

We inspected this grand Vine a few days ago, and are glad to be able to report that it is in the finest possible health, and showing a magnificent crop of fruit. It fills a span-roofed house, some 80 feet long by 18 feet wide, the house having a sunk path through the centre, and, as Mr. Osborne very properly remarked, it would soon fill a house double the size were it only allowed to do so. The Vine is planted about the centre of the house, trained up one side of the ridge, and down the other, and from this base rods proceed right and left, at about 30 inches apart, to the ends of the house. These being trained horizontally, do not rob each other, but equalise the flow of the sap so nicely that branches and bunches are alike from centre to extremity. Some of the young shoots, though not more than a foot long, are as thick as a man's fore-finger, and, as may naturally be supposed, have bunches of proportionate size; but this Vine is not so remarkable for extraordinary bunches as for the uniformity of the bulk, none being monsters, but all of handsome size, and, when ripe, of the finest finish. The Vine is now about fifteen years old, and if proof beyond that which nature supplies in every superior tree that grows were wanting of the superiority of the extension over the trammelling system it is supplied by this noble Vine. There are many houses of fine Vines here treated upon the old system, but not one fit to compare with this plant. The only drawback upon this single plant system is the chance of injury from accident or design, and then the gap would be a wide one; but apart from that, it is manifest that in reason the more we give a Vine to do, so long as we do not overcrop it, the more it is capable of doing. Only a few days back we saw some scores of old Vine plants which we knew in vigorous health forty years ago. Last year, through the incompetence of the person in charge, most of them had to be cut down; they made fine shoots to the top of the house, and are now showing thousands of bunches. These Vines are growing in the valley of the Thames, where Vines never do wear out; indeed, to borrow a phrase from the most successful of early Grape growers, Mr. Montgomery Henderson, of Coleorton, Vines, so long as they are properly treated, never do grow old. There are some older than others, but while you treat them fairly and properly, their natural vigour will never leave them. If we want proof of this we have only to look to the trees of nature: they go on for hundreds or thousands of years, certainly not with the vigour of youth, but with an amount of accumulated strength which seems to defy old age. Young Vines, like young horses, may be quickly crippled. You may take a crop the year after planting, and continue to take mediocre Grapes for many years; but, if you want full vigour, strength to weather the storms of centuries, a Vine should be established five to seven years before it is allowed to carry a full load. In saying this much, it by no means follows that the space must be thrown away for that time. Temporary arrangements for duplicate Vines may be made; which, in the course of time, will be removed to make way for those permanent occupants which have been properly prepared. Too much stress cannot be laid upon this point by those who go in for first-class Grapes; and, if they want proof of it, let them go to Finchley.

It is not generally known that the Ash-leaved Maple (Acer Negundo), of which the fine variegated form is now so popular in our gardens, yields sugar. One-third more of its sap for a given quantity of sugar is required than in the case of the sap of the Sugar Maple; but then the Ash-leaved Maple yields this extra quantity of sap, and as much sugar per season per tree can be produced from it as from the Sugar Maple. The quality of the sugar is the same from both trees, but that of A. Negundo is a little lighter in appearance than that from the Sugar Maple. The method of sugar-making is identical with the method adopted with the Sugar Maple.

NOTES OF THE WEEK.

—— On Monday last, at Lowestoft, the 100th birthday of Lady Smith, widow of Sir James Edward Smith, the celebrated botanist, once President of the Linnean Society, was celebrated by a dinner to 100 of the oldest people of both sexes.

—— Mr. B. S. Williams will send to the great flower show at Alexandra Park on the 24th inst., over 300 of the finest specimen plants from his rich collection at the Victoria Nurseries. These will remain during the following week.

—— The War Department has notified to the Council of Portsmouth that they can have possession of fifty acres of land belonging to the Crown for use as a people's park, and that as soon as a further portion of land can be spared it will be transferred. The grant was made some years since, but various circumstances have occurred to cause delay in the transfer.

—— A new edition of the "Guide-book to the Royal Botanic Gardens at Edinburgh" has just reached us. It contains, as a frontispiece, a plan of the gardens, which will doubtless prove useful to visitors to that establishment; and the letter-press, which is profusely illustrated, will at once direct attention to most of the more remarkable objects which the gardens contain.

—— On the occasion of the recent visit of Her Majesty to the International Exhibition, bouquets of Roses, consisting chiefly of varieties raised and named after Her Majesty and the Royal Princesses by Mr. W. Paul, of Waltham Cross, were presented to the Queen and Princesses by Mr. Paul's children. The entrance to the School of Cookery was decorated with Roses furnished by Messrs. George Paul & Son, of Cheshunt.

—— A second edition of Mr. B. S. Williams's "Select Ferns and Lycopods" has just been published. It is an improvement on the first edition, both as regards illustrations and letter-press. Lovers of Ferns will find it a useful and safe guide to follow in all matters connected with the culture of that interesting class of plants.

—— Walsall is providing for itself an arboretum on a scale which will surpass anything of the kind in the whole district. This is certainly a step in the right direction. No district of equal area and population is, perhaps, so destitute of public recreation grounds as the Black Country. Indeed, were it not for the Dudley Castle grounds, which Lord Dudley now generously throws open, of public parks in South Staffordshire there would be none.

—— One great fault of the massing system of bulb-growing is well seen in Hyde Park, near Park Lane, just now. The Hyacinths having all gone out of bloom at nearly the same time, the vast line of beds devoted to these plants has been worse than a blank for some time past. Any system of gardening which leaves such a large strip of flower garden as that along Park Lane a perfect blank in the month of May, or at any other time, must obviously be bad, from the point of view of the artistic gardener. This strip of garden along Park Lane is at once the most costly, and, as regards design, the most inartistic example of flower gardening that we know of.

—— We observe that Mesembryanthemum aureum has been planted in quantity in the flower-beds beneath some standard trees in Hyde Park, between Albert Gate and Hyde Park Corner, and that when the sun is shining its flowers are very effective. We, however, prefer the brighter coloured M. aurantiacum to aureum, and such of our readers as are fond of contrast might also like to add the crimson-flowered M. splendens, the bright red M. conspicuum, or the purple blossomed M. inclaudens, all easily managed plants, which come into bloom after Hyacinths and early Tulips are over, and which maintain a considerable amount of gaiety at a time when beds would otherwise be comparatively uninteresting.

—— A really good blue-coloured bedding Pansy has long been a desideratum; it may, however, now be found in Messrs. Downie, Laird, & Laing's Blue King, which may be seen at present in full bloom in their nursery at Forest Hill. The flowers of this variety are of fine form, are produced in the greatest possible profusion, and are of a deep vivid blue colour, with a bright and conspicuous yellow eye. Compared with Clivedon Blue and Imperial Blue, beside both of which Blue King is growing, its superiority over both sorts, as respects size and beauty, may be readily recognised even at a distance, and it continues to flower throughout the entire spring, summer, and autumn months without intercession. It throws up its flowers, too, more uniformly than its associates, and it is neither liable to sport nor to be scorched by the summer's sun.

—— Amongst a recent importation of roots of Todea superba by Messrs. Rollisson & Sons, Tooting, there has arrived a kind which appears to be a hybrid between T. superba and T. pellucida, as it possesses characteristics precisely intermediate between these two species. Under the kind of treatment usually given to filmy Ferns, this supposed hybrid has started vigorously into growth, and is now one of the largest and most handsome specimens of the filmy Todeas in the country. It is furnished with some four dozen well developed and perfect fronds, covering a space of 4 feet in diameter. It is kept within a glass case 3 feet 9 inches in diameter, and being raised a little in the case, its gracefully drooping fronds are seen to excellent advantage.

—— Some fine Tomatoes from Algiers have made their appearance in Covent Garden market, during these last eight or ten days. They are large, well coloured, and beautifully ripened, and, notwithstanding their sea voyage, have arrived in good condition, and keep soundly for several days after being imported. They sell for about a shilling apiece.

—— A garland show took place in a field at Stamford the other day, at which thirty prizes, varying in amount from 16s. 6d. downwards, were awarded to juvenile exhibitors from different parishes of that town. A band of music was provided for the occasion, and, after the prizes were awarded, some 500 children were regaled with tea and cake. The day being fine, nearly £15 were taken at the gates.

—— Alexandra Palace, of which we give an illustration in our present number (see p. 386), is to be opened on the 24th inst., when there will be, in addition to a great flower show, a grand concert, conducted by Sir Michael Costa. Many will be glad to learn that at last there is a chance of this spacious building and beautiful grounds gaining public support, and thus becoming secured as a place of popular recreation.

—— Mr. Williams' large new Violet Sensation, now in perfect bloom in the Victoria Nurseries, Holloway, is one of the finest things in its way we have seen. It is intermediate in character, between a good Violet of the Cornuta race and a blue Pansy, and has the early blooming character of the Pansies.

—— It appears that John Stuart Mill, whom we have just lost, was passionately fond of botany, and that his love for natural scenery was intense. It has been his habit, in later years, after a period of the closest application to work in his home at Avignon, to break away, into some new and less frequented field of travel, to collect plants, and, after toiling along on foot under a hot sun, to recount with the simplest enthusiasm what new kinds he had picked up by the way, and what new impressions, grand or beautiful, he had received from the face of nature. This delight in natural scenery came out even in the midst of the driest economic discussions.

—— At the meeting of the Royal Horticultural Society on Wednesday next, there will be an interesting exhibition of stove and greenhouse plants, grown under special conditions. Two years ago a gentleman gave to the society a sum of money for special purposes, and the Council, under the advice of Mr. Marshall, resolved that it should be given for twenty-four plants selected by the exhibitors who paid an entrance-fee of £5 each, and decided that they should show eight plants each at the last May meeting of the society. By some inadvertence the competition has been entered on the schedule for June 4th, but the exhibitors have prepared their plants for May, and insist upon showing their collections according to the original conditions. We have seen some of the competing plants, and are glad to be able to say that the art of superior plant growing has not died out, but that, on the contrary, some superb plants will be presented.

—— The authorities of the city of Paris are considering the advisability of removing the admirable establishment of the "city gardener," in whose forcing-houses, conservatories, and beds the millions of plants and flowers which decorate the public gardens and promenades of Paris are reared, and the more delicate stored in winter, from La Muette to Neuilly. It seems a pity to disturb so well-arranged an establishment as that in question; and considering the number and size of the horticultural buildings, it will be a costly business, but it appears that the land at Passy is in demand at high prices for the erection of new villas, while the city possesses a larger site in the Parc aux Princes at Neuilly, which has failed to attract the Parisians.

—— Last year's report of the Eyemouth and Paxton School Gardens, Berwickshire, is worth the attention of everybody in any way connected with Industrial Schools. The Eyemouth Garden contains, it is stated, 850 square yards (28 perches, 3 yards), divided into ten plots, or small gardens, each cultivated by a single boy, from twelve to sixteen years old. The profits from this small patch amounted in the gross to £7 4s. 6d., being at the rate of £41 13s. per acre. The Paxton Garden contains 497 square yards (16 perches, 13 yards), divided into five plots, and each plot, as in the case of the Eyemouth Garden, is cultivated by a single boy. The united profit from this garden last year was £2 11s. 8½d., or at the rate of £25 1s. per acre. These boys, who have had gardens from one to two and four years, grow Cabbages, Potatoes, Shallots, Onions, Leeks, Greens, Cauliflowers, and Rhubarb.

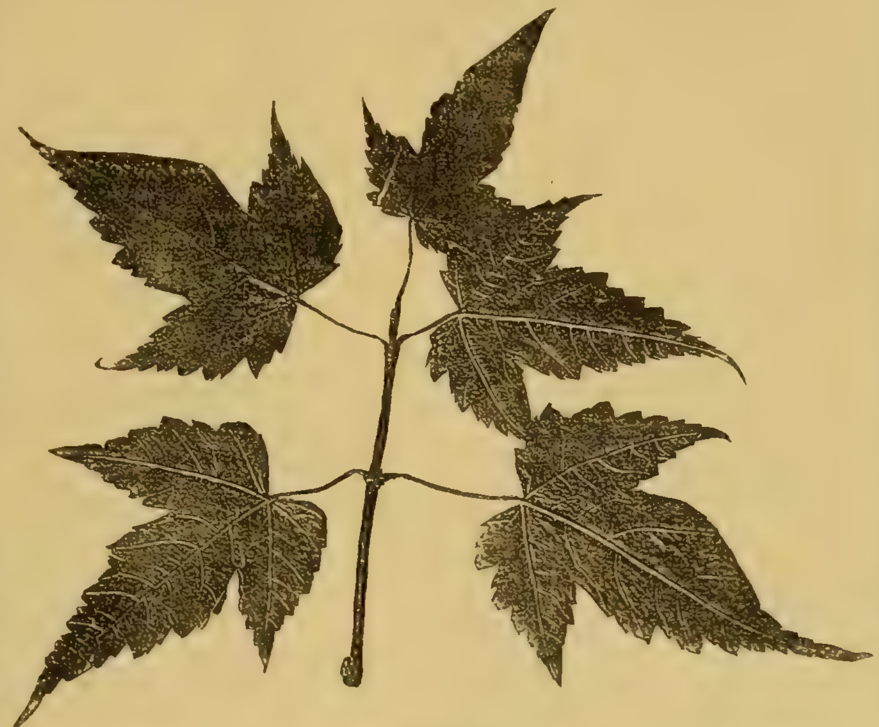
THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE ACUTE-LOBED MAPLE (ACER ACUMINATUM).

This forms a fine, erect-growing, deciduous tree, from 30 to 40 feet high, with erect branches, and rather long, slender, smooth, glossy shoots of a reddish colour. It is a native of Upper Nepaul, in Sirinagur, where it is called "Khainsing," and was first introduced in 1845. It is quite hardy, and grows freely in any good garden soil. It is easily increased, either by layers or by means of cuttings made of the half-ripened shoots in the autumn. The leaves are of medium size, either three-lobed or visibly five-lobed, doubly serrated on the edges, cordate at the base, smooth on both surfaces, deep green above, and set on not very long footstalks, and they are retained on the tree until destroyed by the autumn frost. The lobes are oval, with long, tapering acute points, and unequal in size, the middle one being much the largest, and doubly serrated. The principal ribs and veins on the under side are very prominent, with the centre one straight from the footstalk to the tip of the outer lobe. The flowers are greenish white, and are produced in April in axillary, erect, few-flowered corymbs along with the young leaves. The keys or fruit are smooth, with thick carpels and oval wings, rather spreading. The length of a full-sized leaf is 6 inches, including the footstalk, which is from 1 to 1½ inch long, and the breadth is about 3 inches.



Acer acuminatum.

The Laurustinus as a Cottage Wall Plant.—While passing along a country road the other day, I was struck with the beauty of a cottage front clothed with Laurustinus, which at a little distance off looked exactly like a white Ixora. It was neatly trained and profusely flowered, and looked beautiful in the distance. It is one of the best plants for a cottage garden, and also for the bottoms of cottage walls, and the clothing of outhouses with evergreen beauty, producing a harvest of pinky white and pure white blossoms from Christmas to May. Perhaps, however, the shining-leaved variety is the best for this purpose; but all Laurustinuses are beautiful, and they are easily grown and readily propagated. They are also useful for cutting, and for contributing to the filling of vases and the making of bouquets, and are often used extensively for the base work of wedding and other bouquets. For a cottage parlour table who could wish for a nicer bouquet than a base of Laurustinus crowned with bunches of Violets? Or, later in the season, single Moss or monthly dark China or pink Roses or sprays of Ribes or dark Wallflowers displayed over or arranged amongst it?—D., *Bury*.

Forsythia viridissima.—This, though one of the brightest of early spring-blooming hardy shrubs, is not nearly so much grown as it deserves to be. Like Jasminum nudiflorum, the flowers come before the foliage, and continue in great beauty a long time. Unlike many early flowers, cutting winds do not seem to have much effect upon its duration. I don't think I have ever seen it more bright and beautiful than it has been this spring. It is very handsome, either as a single cone-shaped specimen, supported by a stout stake or pole in the centre, or as dwarf masses nearer the edge of the shrubbery. It requires a little attention with the pruning-knife once a year after flowering, and any gross shoots that appear afterwards may be advantageously pinched in. By this means a neat compact outline may always be preserved. In addition to its usefulness in the shrubbery, it is a capital plant for quickly covering a naked wall, clothing it, as it were, through a good portion of March, April, and well into May, with a sheet of bright gold. We have two plants here, one on either side of a doorway in the garden wall, that must have been years ago at the top of the wall. I believe there is scarcely any limit to the height it will grow in moderately good soil. Neat bushes of it also, *in* pots, make useful and very desirable plants for the conservatory in mid-winter, coming into bloom early, without much forcing, if the wood has been previously well ripened. It is easily propagated by cuttings of ripened wood in September, under the north side of a fence. I once made a lot of cuttings in the autumn, and they were laid in deeply in bundles, till a favourable opportunity for planting arrived. Well, a pressure of other matters occurred, and the cuttings were left till April, and when examined, most of them were callused, and many had emitted roots. I mention this merely to show that with cuttings of this and similar things it is important for the cutting to be taken off early in autumn, and properly made with a sharp knife; when, if not finally planted for several months afterwards, they will take no harm, as the work, preparatory to rooting, is being silently carried on under ground, and it is work that cannot be hurried. One reason why a good many cuttings of shrubs, Roses, &c., fail when put in by amateurs is, they are taken off too late; nature has not time to perform her work before the period arrives for the sap to ascend.—E. Hobday.

Various sizes of Trees.—At a meeting of the Academy of Natural Sciences, held at Philadelphia, last October, Mr. Thomas Meehan remarked, that, as botanists well knew, Quercus prinoides seldom grew more than 2 feet in height. It was one of the smallest of shrubs. In his collections in Kansas, he found Oaks in the vicinity of Leavenworth, which made small trees from 10 to 15 feet high, and with stems from 1 to 2 feet in circumference. He was entirely satisfied that it is identical in every respect but size with the Q. prinoides of the Eastern States. Among trees there are few which produce forms as low shrubs, but the Pinus Banksiana, in the East but a bush of 5 or 10 feet, grew often 40 feet along the shores of Lake Superior; the Castanea pumila, Chinquapin Chestnut, when it gets out of the sands of New Jersey into the clayey soils west of the Delaware, often grew as large as many full grown Apple trees; while the Celtis occidentalis, which in the East is generally but a straggling bush along fence corners, is in Ohio a large spreading tree with an enormous trunk, and in Indiana is as lofty and as graceful as an Elm.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Cistuses for the Wild Garden.—At Heatherside these brilliant shrubs are found to thrive freely in the "wilderness," no doubt owing to the free open soil; and what glorious additions to the wild garden!—W. R.

Large Tulip Trees.—The largest Tulip tree I ever saw was on Col. Ambler's estate, in Virginia. It was 210 feet in height, and the trunk, which was branchless for 100 feet in height, was 42 feet in circumference at 5 feet from the ground, the spread of the branches being 150 feet. This tree was killed by lightning in 1856. I have measured trunks of other Tulip trees in Virginia, and have found them over 36 feet in circumference. In England the best Tulip tree I have seen is at Fulham Palace.—Joseph Newton.

ANCIENT EMPLOYMENT OF FLOWERS.

The words "copia narium," which "W. M." (see page 328) adduces as proof that I am wrong in saying that there is no allusion in the classical Latin authors to bouquets, have nothing to do with the argument. They occur in the 15th ode of the 2nd Book, this particular ode being playfully levelled at the constantly-increasing luxury of the Roman nobles, a result of which growing luxury, he says, will be that, in a little while, palaces and ornamental waters will occupy all the land that once was devoted to farming purposes, and that "the Olive plantations, once so fruitful to their owner, will be superseded by banks of Violets, Myrtles, and other plants, in all their plenteousness, that are delightful to the nostrils."

> Tum violaria et
> Myrtus et omnis copia narium
> Spargent olivetis odorem
> Fertilibus domino priori.

The passage cannot be translated in fewer words, so as to convey a full and proper sense of its meaning to persons not acquainted with Latin. In what possible way can it be tortured into a disproof of what I have said? My assertion is, that bouquets are not mentioned; "W. M." points to a jocular allusion to possible plantations of odoriferous shrubs and herbs! The second argument brought forward by your correspondent to prove that the ancient poets make allusions to bouquets is, that he ("W. M.") "cannot rationally conclude" but that the Roman youth must have worn such things. But where is the remotest allusion to such a practice to be found? The poets' allusions are the things desired, not guesses and speculations, unsupported by a tittle of evidence. And upon what ground does "W. M." build his surmise that we do not possess a full glossary of Greek and Roman colloquial words? Is he acquainted with the writings of Aristophanes, Athenæus, and Petronius Arbiter? Thirdly, "W. M." considers that Virgil's comparison of the premature death of the youth Pallas to the snapping of the peduncle of a flower by a thoughtless girl, is "an allusion to bouquets"! Why did he not quote at the same time the gathering of the flowers by Proserpine, when she was at play with her companions in the fields? He goes on to say that the simile in question "so sufficiently confutes" my "not well-considered notion," that he need not pursue his remarks. Will "W. M." have the kindness to "pursue his remarks" immediately, in the shape of even a single quotation from any classical Greek or Latin poet in which a bouquet is mentioned; will he give us even the corresponding Greek or Latin word? If I am wrong I shall be only too thankful to be set right. Meantime I cannot consider that my statement is disproved. Will "W. M." kindly intimate what flowers Virgil intended by Viola and Hyacinthus? Of course he is well aware (at least I hope so) that with the ancients these names did not apply exclusively (if in Virgil at all) to the botanical genera which bear them at the present day. Leo Grindon.

Sweet-scented Flowers.—Mr. Grindon's remarks on flower odours (see page 319) will take thousands by surprise, especially those sticklers against plants and flowers in rooms who would not have one for the world, for fear some delicate person might "die of a Rose, in aromatic pain." Still there are those to whom what are called sweet scents are positively offensive. My object, however, is not to plead for sweet flowers, but to suggest how, at a small cost, we may command them in quantity. When employed in Nottingham, my residence was on the outskirts of the forest, and consequently, in going to my office, I had to pass scores of gardens. A whiff of Mignonette here and there determined me to have more of it, and consequently, in the following spring, armed with a few ounces of seed, I threw a pinch into almost every garden that I passed, thus taking a summary way of furnishing them with sweet flowers. I threw the seed over the fence, feeling convinced that the plants, when once recognised, would not afterwards be banished. My scheme succeeded, and for a few pence I was rewarded with miles of sweet odour. Let others go and do likewise, and they will be unawares sowing miles of ozone, pure oxygen, health and happiness for thousands. I am surprised that sweet flowers are not more widely cultivated in our public promenades and gardens than they are. A word to the wise, I trust, will be sufficient. If I used a public path, I should, so far as sweet annuals are concerned, take care of myself.—A.

Antiquity of Flax.—Dr. Oswald Heer, of Zurich, has published a paper "On Flax Culture in Pre-historic Times." He finds the original home of the Flax to be along the shores of the Mediterranean. It can be shown that the plant was cultivated in Egypt 5,000 years ago. Flax is found among the remains of the oldest pile-dwellings in the Swiss Lakes, where neither hemp nor wool has been discovered; and it is probable that the old lake-dwellers received the Flax-plant from the South of Europe.

THE INDOOR GARDEN.

PLANT GROWING FOR MARKET.

Looking at the immense area of London and its suburbs, its myriads of houses, and almost countless flower-loving population, there is little need for wonder that such large quantities, both of plants and cut flowers, should annually be swallowed up by it, or that plant-growing establishments on a large scale should be required to supply its wants. Of these, one at Feltham, carried on by Mr. Henry Bailey, deserves more than a passing remark. This was established some twenty-five years ago by the late Mr. Catleugh; but, under Mr. Bailey's five years' proprietorship, it has increased in importance considerably, producing tens of thousands of plants and cut flowers annually. A huge span-roofed building constitutes the "finishing" house for Fuchsias and show Pelargoniums, and there are some two dozen other span houses, averaging 80 feet long, and 14 feet wide, all heated by Weeks's tubular boiler. Each house is supplied with a capacious water-tank, and these tanks are all connected by means of pipes leading to a large tub that is placed on a platform close to a pump—an arrangement by which the whole of the houses can be readily supplied with water. Starting with the beginning of the year, the plant season might be said to commence with Primulas, Cyclamens, and Lilies of the Valley. Then come Cinerarias, Hoteia (Spiræa) japonica, show and fancy Pelargoniums and Fuchsias, which constitute, with Hoteias, Lycopods, &c., the bulk of the plants now ready for market. With the excellence of Mr. Bailey's Pelargonium-growing most people are acquainted, as when at Shardeloes he exhibited at our great metropolitan shows some of the best grown and flowered Pelargoniums ever staged. Those at Feltham are in 48-sized pots, yet they are full of foliage, glossy, green, and healthy, and carry heads of eight, ten, and twelve trusses of flowers. The kinds most in request and best adapted, both for forcing and market work, are show sorts, such as Minnie, rose; Wm. Bull, crimson scarlet; Belle Blanche, and Albion, white; Mrs. Lewis Lloyd, and a few unnamed seedlings. Of these varieties, from 10,000 to 12,000 are grown each year, and in order to keep up the stock the process of propagation commences as soon as the smallest cuttings can be obtained, and is maintained incessantly all through the summer. In the various houses Pelargoniums may now be seen in different stages of growth, but by far the larger proportion of them are rapidly approaching the blooming period, in close succession. The essential points as regards culture are, cleanliness, a position near the glass, and a never-failing supply of water. The compost used is good rich loam, and a fair admixture of very rotten manure. Occasional doses of liquid manure are also given after the flower-buds have appeared. The old Pelargonium Gauntlet, a reddish-scarlet, is largely grown here for winter-blooming; it forces admirably, and furnishes a large supply of flowers fit for cutting from October to March. Of Fancy Pelargoniums, such kinds as Princess Teck, Fanny Gair, Lucy, Acme, and one raised many years ago, called Princess Marie, are grown in quantities, and the heads of flower which they produce, combined with dwarf robust growth, excite one's admiration. These require neither stopping nor tying, and some 2,000 are sent to market annually. Marvellous examples of the Hoteia japonica are produced in hundreds in 48-sized pots—charming plants, 24 inches high and as much through, each bearing a dozen spikes of bloom. These are raised from roots of continental growth, potted up in November, plunged in cold pits in a bed of rotten tan, and sheltered from heavy rains until they burst their crowns about January, when the earliest batch is pushed on in gentle heat, the remainder following in succession in cool houses. Such moisture-loving plants are these Hoteias that on dry sunny days they want water four times a day, those growing in heat being also set in saucers.

Fuchsias are grown in immense quantities, especially that excellent light variety known as Mrs. Marshall, of which capital plants may be found here 18 inches high and 12 inches through, beautifully in flower, fully foliaged, and growing in 48-sized pots. One large span-roofed house is devoted, as I have said, to the "finishing" of this variety just now, and other kinds will shortly follow for summer decoration. Mrs. Marshall must of necessity be frequently "pinched" while growing, but Lady Heytesbury, a favourite white kind, is best if left alone, naturally forming very speedily of its own accord a neat little pyramid. Souvenir de Chiswick and War Eagle are both useful red kinds for market purposes. The best Heliotrope is Florence Nightingale, a good dark kind; and the finest of all the scarlet Zonal Pelargoniums for cutting flowers from in winter is Vesuvius, of which many hundreds are grown. Maidenhair Fern is in large demand for cut fronds, and of Lycopodium denticulatum some 8,000 pots are disposed of annually. The stock plants of this are grown on a border in one of the large houses, and portions of them are being continually taken off, struck, and potted up into 48-sized pots; the soil, which must be light and porous, consists of peat and leaf-mould. Grown as at

Feltham, in a somewhat shaded house, in a gentle heat and with plenty of moisture, good established plants fit for sale are obtained in about three weeks.

For cut flowers, which are always in demand, a lot of fine Tea Roses is grown in pots; also Fielder's White Azalea, which is one of the best for forcing, Gardenias, Vallotas, and the Narcissus Poeticus, the latter being most successfully managed in pots by putting about twelve bulbs into a 32-sized one, and plunging them out-of-doors until they start, when they are lifted and forced in gentle heat; established roots of this Narcissus usually do better the second year than the first. In several houses Stephanotis is planted out and trained along the roof, a position in which it makes wonderful growth and yields an abundance of flower. Nothing is more evident than that this beautiful climber needs plenty of space both for root and top, and that under such conditions it will grow as fast as hops.

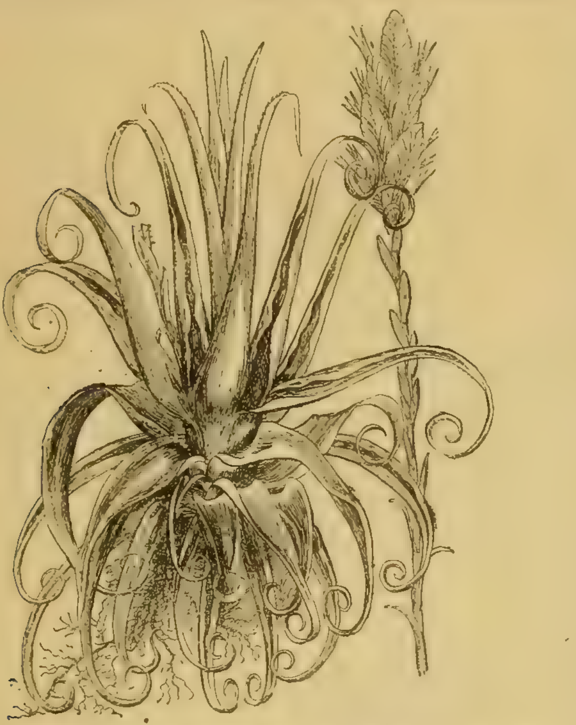
A. D.

A SINGULAR BROMELIAD.

TILLANDSIA REVOLUTA (*pro tem.*).

Now that succulent plants are again coming into public favour, a few words descriptive of a new, or at least undetermined, Tillandsia, may be of some interest. We have not many species of Tillandsia in cultivation, though some of them do remarkably well if treated like Orchids and other tropical epiphytes. T. argentea is one of the most valuable cultivated species, and is also very rare. Its silvery foliage is its chief attraction. T. usneoides, a species from the West Indies, is very peculiar in its habit of growth. It may be seen growing on several plants in the Royal Gardens, Kew, and looks very much like a bunch of dried Grass or Sedge. The present South American species comes from a strip of forest about three miles from Campo Coronta—*i.e.*, the Crowned Camp—a small cattle station on the river Parana, in Corrientes, thirty miles from Goya. This place may be reached *viâ* Buenos Ayres, from which it is distant some six hundred miles. This and several other Bromeliads are found on the trees in this vicinity in tolerable abundance, in company with scandent Polypodiums and other epiphytes and sub-terrestrial plants. It appears to be a plant of free growth, and has leaves which vary from 3 inches to a foot in length. From the quantity of old flower-spikes on imported plants, it is evidently a profuse bloomer, though it is questionable whether the flowers are of very great beauty. The most peculiar point about this plant is its leaves, their margins being involute, while their apices are decidedly revolute and prehensile. They may not inaptly be likened to the caudal appendages of certain Quadrumania, since they clasp any branchlet or twig within their reach, and thus suspend themselves firmly in their aërial habitats. These leaves are of a velvety texture, and of a bright silvery colour; indeed, it is a worthy rival to T. argentea, and far more interesting. In all probability the first living plants imported to this country were obtained by Mr. Gaylard Hadwen, though the plant has existed in herbaria for some considerable time. Mr. J. G. Baker considers it near Tillandsia rubra, R. and P.; and the same plant, or one nearly identical, may be found in Mandon's Peruvian Collection (No. 1,185). As a provisional name, I would suggest Tillandsia revoluta.

F. W. BURBIDGE.



A New Bromeliad (Tillandsia revoluta, pro. tem.) one-third natural size.

Cobæa scandens variegata.—Allow me to add the name of this very desirable plant as a conservatory climber, to those recommended by your correspondent Mr. Dick (see p. 334). This is certainly a most valuable plant for the purpose just named, being exceedingly ornamental, of rapid growth, and it enjoys a perfect immunity from the attacks of insect pests of all kinds. Unlike most variegated plants, the condition of variegation has little if at all diminished its vigour or growing powers. It is admirably suited for training up pillars and for festoons under the roofs of the most lofty conservatories, and the distance it will grow in one season is truly astonishing. It must, however, have abundance of root room, and the system recommended by your correspondent of keeping the roots outside the structure is exactly the treatment which it requires.—P. G.

Cowan's Heating Apparatus.—In my notice of Mr. Cowan's ingenious and entirely novel system of heating horticultural buildings, you have interpolated the observation that "the system is not quite new." I firmly believe, however, that in a simple and practical form, suitable to structures of any dimensions, the very perfect and ingenious system of Mr. Cowan is without a predecessor; notwithstanding that rude experiments upon an analogous principle, ending in failure, may possibly have been attempted, although I have never heard of them. I trust that in justice to Mr. Cowan's excellent system, and to my own careful observation of its working (which extended over several days) you will give immediate insertion to this letter.—H. NOEL HUMPHREYS. [What we meant was that the application of lime-kiln heating to horticultural buildings had been tried before; not that Mr. Cowan's particular, and as it proves, excellent plan of carrying out the system was not new.]

Balsams.—These require—Firstly, all the light our climate affords, which suggests clean glass, and that the plants, during all the stages of their growth up to blooming, should be kept as near it as is practicable. Secondly, a rich open compost to grow in, through which the roots will readily ramify, and rich enough to furnish them with food sufficient to keep the top growing freely; the great demand made on the roots during the period of active growth informs us that liquid manure is a useful auxiliary to keep up the vigour of the plants, and may be applied freely when the pots become full of roots. Thirdly, bottom heat; to give every encouragement to a free growth, the application of a mild bottom heat from the first stage of the plant's growth till the bloom-buds are formed should be maintained; when the buds are duly formed, and any further extension of growth unnecessary, the bottom heat should be allowed to die gradually away, so as to harden the plants, to bear the comparatively cool temperature of the conservatory for blooming. Fourthly, air during every stage of growth; the Balsam requires a large supply of air, that the plants may not become drawn and slender, but kept short-jointed and stocky in habit, which will enable the lateral branches to support themselves without stakes until the blooms expand, when they will be required.—M.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Tree Carnations.—How am I to treat some plants of these that have become what is termed "lanky"?—W. S. [Train them round four sticks, or other kind of trellis, keeping the shoots as low as possible, and place the plants in the open air during the summer months.]

Abutilon Boule de Niege.—Just imagine a pure white Abutilon! really snow white, and as large as A. striatum. Such an one has just been introduced from the South of France, by Messrs. Standish & Co., of Ascot. It can claim some degree of hardihood, for at Caen, in the South of France, it has successfully withstood the winter growing in the open air. It is a fine bold-leaved variety, blooming with great profusion, and throwing its chaste bell-shaped blossoms outside the leaves. As a conservatory plant it is a great acquisition; it will be gladly welcomed by sub-tropical gardeners, and it is said to be of great value for bouquets.

THE FRUIT GARDEN.

FRUIT PROSPECTS.

THE first of May set in here with a soft south-west breeze and a genial temperature, very different from the cold, piercing, sharp east winds experienced during the previous ten days, and already our hopes are high that good crops of Plums, Pears, and Apples will be realised. Our early crops of Strawberries have been a signal failure as regards flavour. We had fruit set and swelling early in March, but there was no sun and no light, and a dense fog frequently enveloped everything. The fruit was of fair size but tasteless and without colour. President, Keens' Seedling, and Count de Zane (a variety much prized in this neighbourhood) were a greenish white. April, however, brought us good gatherings of these varieties, and good-sized fruit. During the fog, or what may be termed "the dark season," early Vines showing fruit suffered more or less; tendrils lengthened, and the embryo bunch had a tendency to elongate more than was necessary; but as the air cleared this state of things altered, and the principal crops of Grapes are now all that could be desired. Early Peaches and Nectarines have gone on all along well, and are now swelling off one of the best crops we have gathered for years. Those under glass covers are now setting, and are likely to prove as good as heretofore. Plums, Cherries, and Pears grown under similar circumstances are also very promising. The snow and frost of April 25th did considerable damage to a few of the early Gooseberries, and to such blossoms of Plums, Pears, and Peaches as were expanded in warm, although exposed, corners; but the principal crops are still safe. Apples, both in the garden and orchard, in a few days will be one mass of blossom.

Southend Gardens, Darlington. JOHN RICHARDSON.

RENOVATING A FRUIT AND KITCHEN GARDEN.

SOME remarks have lately appeared in THE GARDEN (see p. 119) on this subject. If the garden to be renovated has been much neglected, it will be a matter to consider whether it will not be best to sweep the fruit trees clean away, and begin afresh, or whether among them there may be some that may be worth retaining. Of course much will depend upon the kind of trees that have to be dealt with. No man would think of destroying a decent tree of any good kind of Apple, Pear, or Plum, until such time as young ones had been reared in a bearing state to take their places. To replace a Greengage Plum, Ribston Pippin Apple, or Gansel's Bergamotte Pear, is no easy matter, for I have always found that an old thoroughly established tree, of any of these kinds of fruits, will produce much better flavoured specimens than the most healthy young plants. This arises no doubt from the maturing principle having been more fully developed, or in other words there is less water in the composition of the tree than in a young specimen which may be considered as only in process of development. Of course much of the flavour of a fruit depends upon soil, situation, and growth, but all things considered I believe it will always be found that old established trees impart more flavour to their produce than young growing ones. Thus I almost reverence an old Greengage Plum, and I have much respect for an old Ribston Pippin Apple. The decision being made as to what trees shall be retained, the first work of the improver will be to clear away those condemned, grubbing them out root and branch; then carefully prune and thin out the branches of the trees retained, so as to allow the air and light to sweep freely through the interior. I once found a Blenheim Orange Apple growing in a garden from which I cut away sufficient wood to make twenty-five large faggots, and the following season the tree produced about ten bushels of the finest fruit of the kind I ever saw. Not a fruit was less than eight ounces in weight, and many of them more than a pound each. The advantage of pruning old crowded fruit trees cannot be overrated. If trees are properly managed, the branches should never be allowed to cross, neither should the inside of the trees become crowded with wood. Numerically, so allowed to run to waste, a large quantity of fruit may be produced; but, subjected to the market test of price, or the cook's test of quality, it will always be found that well-grown fruit is much more valuable than a larger quantity of inferior produce. Well, the trees being pruned, and the bark cleaned of Lichens, Moss, and insect pests, the next thing to be considered will be the ground. If it has not been thoroughly drained, or if the old drains are not in good working condition, it will be best to put in new ones. These, for a kitchen garden, should not be less than 4 feet deep, and should be formed of 2-inch tubes neatly fitted together at the joints. If at hand, a turf, Grass side downwards, some Couch roots, small branches, or straw may be thrown over the pipes before the soil is filled in. Some object to this practice, but I think it is a protection, and prevents the pipes being disturbed when filling in the soil; and, moreover, it forms a rough filter for the water to pass through. For a kitchen garden the drains should not be more than 18 to 20 feet apart if the soil is light, but if heavy, 15 feet apart will be much better. The extra cost of an additional drain is not much compared with perfect efficiency of the work. Of course many will object to deep and frequent drains. Well, let them do so. When I see shallow ill-drained soils produce finer crops than deep well tilled ground, then I will change my opinion. Until then I must advocate deeply-drained and deeply-trenched ground for all permanent improvements of the soil. The thicker the sponge above the drain the larger the quantity of moisture it will hold, and consequently the larger the quantity that will be available for the roots of the plants when dry weather sets in. Of the correctness of this assumption I have had ample demonstration in almost every county in England. The Lois Weedon system of cultivation, which was so successful while it was carried out, consisted in deep draining and deep cultivation without manure, but many cannot see, and others will not see, the advantages of such a system. Putting aside the advantage of deep cultivation in the field, there can be no question respecting its advantages in the garden. All, I think, are agreed there, and the best gardeners would like to go a little deeper if they could. I, therefore, pronounce 3 feet to be a minimum depth to which the soil of a garden ought to be stirred, not necessarily bringing the bottom soil to the top, but placing it so as best to serve the purpose in view. Thus, if I had good soil to the depth of 2 feet, I would, in an old garden, completely reverse it to that depth; but if the subsoil was of inferior quality, I would leave it there, breaking it up to the depth of a foot, either with a pick-axe or Parkes's steel fork.

For the improvement of an old garden soil I have much faith in the use of salt, and if lime and salt can be mixed together, so much the better. Most plants like salt, when used in moderation, and such things as Asparagus and Seakale, seaside plants, will take any reasonable quantity of it. Of this I should not hesitate to use 3 cwt. per acre, thrown over the ground after trenching, as I should expect it to be washed far away from the plants long before they could be injuriously affected. Supplement salt with lime, and you can scarcely make a more healthy preparation of the soil for planting. Lime upon an old soil, especially one rich in vegetable matter, can scarcely be used in excess. We do not use lime nearly so plentifully as we ought to do in our gardens, and the consequence is the land gets sick of the enormous quantity of manure which we give it. In fact it becomes sour, vegetables grow rank, but ill-matured, and hence have not the flavour as when the ground is thoroughly healthy. No person who has been using manure liberally can do wrong in giving a good dressing of lime, more especially if the land is heavy. Upon light soils it may be wise to use it more cautiously. One word more: I would advise the walks and every part of the garden to be trenched so that the trees may make use of the good soil under them. Of course the material of the walks can be preserved, but before it was used again I should take care to work a liberal supply of lime and salt into the subsoil. A.

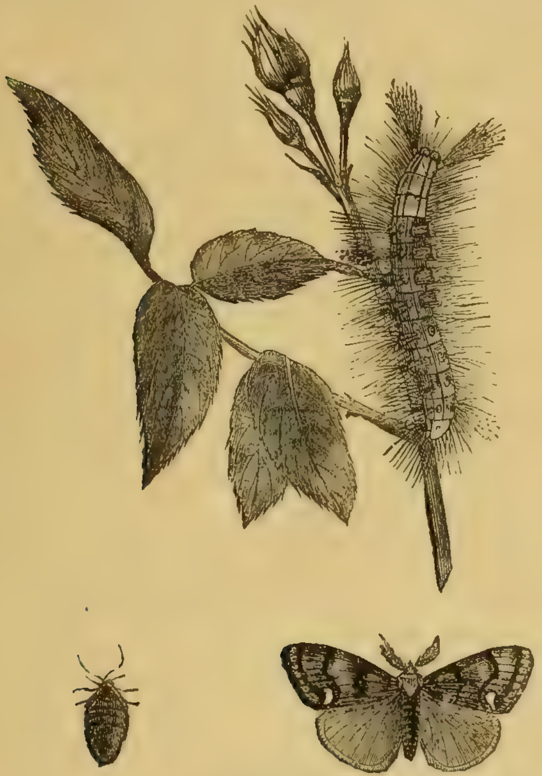
THE FLOWER-DE-LUCE.

BEAUTIFUL Lily, dwelling by still rivers,
Or solitary mere,
Or where the sluggish meadow-brook delivers
Its waters to the weir!
Thou laughest at the mill, the whirr and worry
Of spindle and of loom,
And the great wheel that toils amid the hurry
And rushing of the flume.
Born to the purple, born to joy and pleasance,
Thou dost not toil nor spin,
But makest glad and radiant with thy presence
The meadow and the lin.
The wind blows, and uplifts thy drooping banner,
And round thee throng and run
The rushes, the green yeomen of thy manor,
The outlaws of the sun.
The burnished dragon-fly is thine attendant,
And tilts against the field,
And down the listed sunbeam rides resplendent
With stell-blue mail and shield.
Thou art the Iris, fair among the fairest,
Who, armed with golden rod
And winged with the celestial azure, bearest
The message of some god.
Thou art the Muse, who far from crowded cities
Hauntest the sylvan streams,
Playing on pipes of reed the artless ditties
That come to us as dreams.
O flower-de-luce, bloom on, and let the river
Linger to kiss thy feet!
O flower of song, bloom on, and make for ever
The world more fair and sweet. —*Longfellow.*

GARDEN DESTROYERS.

THE VAPOURER MOTH (Bombyx (Orgyia) Antiqua).

It would seem lost labour for an entomologist to attempt to collect in the streets of London, but the ground is not utterly barren, and a list of species taken thence would furnish material for much interesting cogitation. It is not our business to go into that enquiry now; we only wish to draw attention at present to one of the species which would come into that list, and which may be pre-eminently called a Cockney insect—the Vapourer Moth, or Orgyia antiqua of entomologists. The caterpillar (which is one of the most remarkable and beautiful of the hairy caterpillars), is to be found in every square in London, and the male is to be seen dashing about in the streets, from right to left, during summer, and especially frequent towards the beginning of autumn. Its flight seems a series of reckless and purposeless vagaries, but it is not so destitute of meaning as it looks like. It is busy peering, or rather seeking with its large plumose antennæ in every direction in search of the female. She, however, is not to be seen flying about. No pairs are ever seen lilting and flirting in the sunshine. In all his airy sports and rambles the male has no companion; in that respect his wife might serve as an example to our frivolous or fast girls of the day, although they might retort that she has little merit in not gadding or flying abroad, seeing that she cannot fly, and that her abstinent, staid, and proper demeanour is thus compulsory.



The Vapourer Moth.

The male is a pretty moth, with wings of a reddish-brown colour, and two sinuous transverse bands of a darker colour, of which the outer and larger terminates in a lunule of a pure white. The under wings are yellowish red. The female, although she cannot fly, is not absolutely without wings. She has very small stumps of wings, which require to be sought for to be found. She is about a quarter of an inch in length, and of a rather dark grey colour. Both sexes are represented in the accompanying woodcut. The insect has usually two main broods, but towards the end of the season the broods become confused, there being apparently a continuous succession of generations—eggs, caterpillars, and perfect insects being to be found at the same time and together during the whole of autumn. The eggs of the first brood are laid at the beginning of winter, and remain unhatched until the end of spring. The caterpillars of the first brood come out of their eggs about the beginning of May, and the perfect insects from them appear about the end of June and beginning of July. Of the second brood, or succession of broods, the caterpillars first appear in the end of July and in August, and the perfect insects in September, and onwards until winter. The caterpillar is very common in the autumn, and there is scarcely a plant on which it will not feed, but it more particularly affects fruit trees and Rose trees; it varies in colour, being sometimes of a very pale bluish grey, sometimes blackish, and sometimes whitish, with tufted greyish hairs implanted on the tubercles with which it is furnished. The first segment has, on each side, a long bundle of unequal hairs, each terminated by a little knob, which when united look like horns; near the tail the eleventh segment has a similar bundle inclined backwards, the fifth segment (a little before the middle) has also one on each side directed outwards. The fourth, fifth, sixth, and seventh segments have each on the middle of the back a double brush of hair without knobs at the top, of equal length, sometimes white, sometimes grey, sometimes yellow, often red, and sometimes blackish. On each side of the body there is a range of red tubercles supporting the little aigrettes. On the back the spaces between the segments bearing the brushes are black. From the last brush until the tail the colour becomes deeper, and presents on each ring two red tubercles in a line with those of the lateral range, forming a semi-circular band. The first segments have also each a like semi-circular band.

For its metamorphosis the caterpillar spins a soft whitish cocoon intermingled with hairs, which is placed between leaves or on the trunks of trees, or in crevices in walls, &c. The pupa is yellowish with the wing parts blackish-brown.

The number of (and the consequent mischief done by) the caterpillars of this species varies greatly in different years. Boisduval, for example, mentions that in 1836 they stripped off all the leaves from the Limes in the garden of the Palais Royal at Paris. They were in such large numbers that they were seen crawling over the ground on all sides. As he observes, the greater number probably died of hunger, because in the following year at the same time only a few individuals were to be seen. Last year appears to have been one of their abundant years, complaints with specimens for determination having been sent us from various quarters.

An effectual but troublesome contrivance has been devised to protect fruit trees from the attacks of another moth, Cheimatobia brumata (the Winter Moth), the female of which, like this, if not absolutely apterous, is at least without power of flight, namely, by surrounding the stem with a box or boot with a projecting ledge, the underside of which is kept freshly tarred, so that no insects can creep up it across the belt of tar, and it might be expected that similar means would be equally successful here. But the Winter Moth undergoes its transformation under ground, so that when the female wishes to lay its eggs near the leaves on which its young are to feed, it has to creep up the trunk to get at them, but the Vapourer does not go into the pupa state in the ground, but often among the leaves or on the stem or branches, so that it often has already passed the proposed moat before it requires to deposit its eggs, and the contrivance is thus, as regards it, of comparatively little value. A. M.

NOTES AND QUESTIONS ON GARDEN DESTROYERS.

Phylloxera vastatrix.—This still claims the attention of French chemists and naturalists. M. Barral informs the Académie des Sciences that the Vines are freed from the pest by the use of the following powder: one part of cinnabar, five parts of sulphate of lime, eight parts of lime, and eight of flowers of sulphur.

To Destroy Moles.—I would advise "E. C." to shoot them. Do not laugh at the suggestion, but try it. I have done it scores of times in my seed beds, when the rascals had got "up to trap." Be out early in the morning with the gun when they are busy rooting, steal quietly to the place (up wind), get the gun almost perpendicular over them—muzzle about a foot or a foot and a half from the ground, consistent with safety—watch until they commence to root, then "blaze away." Dig down afterwards, ten to one the mole is there, as dead as a herring, although he has been six or eight inches below the surface. —*Keeper, in Field.*

THE FLOWER GARDEN.

THE GOLDEN THYME.

(THYMUS CITRIODORUS AUREUS.)

This has no equal in its way in the spring garden; either in lines, patches, or masses it fills the eye with its rich golden colour, while in habit and general character it is all that can be desired. It will doubtless, too, supersede all other Thymes for culinary purposes. It is also the earliest of all Thymes; for, while the common, and silver-tipped, and Lemon-Thymes have hardly started, this golden gem is a dense mass from 4 to 6 inches high. We have a fine row of it on a ribbon border, and even Golden Feather is poor in comparison with it. Beautiful as a summer bedding plant, and proudly holding its own among all the smaller edging plants, such as Alternantheras, Cerastiums, Echeverias, Sedums, Golden Feather, &c., it is yet more lovely in the spring season. Patches or single plants of it among alpines in ferneries will impart a richness to them such as no other plant can give. I intend to grow it by the thousand for contrasting with Myosotis dissitiflora, Aubrietias, Violets, &c. Hitherto there has been a great scarcity of golden contrasts to these blues and purples; the Doronicums are too coarse, the Alyssum saxatile too late, and the Golden Feather too rusty in the early spring. The yellow Pansies and Violas are also too late for early spring-work. But this Golden Thyme is just the right plant at the right time, and it only remains for us to put it in the right place to fleck or fringe our spring gardens with gold to any extent. It is almost impossible that any plant could exceed this in richness of colouring, compactness of habit, freedom of growth, and hardiness of constitution. In regard to the latter it may be said that this winter has not tested it much. This, however, is quite a mistake. The frequent ground-frosts which we have experienced this winter have been more trying to many spring flowers than the much more severe frosts of ordinary winters. Forget-me-nots, and even Violets (the Czar especially) have suffered much; and in regard to Thymes, the common and the Lemon alike look rusty, whereas this splendid Golden Thyme is strong and vigorous as I have described. D. T. Fish.

THE BEST BEDDING PELARGONIUMS.

[From among those tried at Chiswick last year we have selected only such kinds as have had *** attached to them as indicating the highest degree of merit, and which are stated in the "Report" to be equal to first-class certificates. These are arranged in series distinguished first by the leaves, and then by the colours of their flowers, those falling under the respective subdivisions being arranged alphabetically.]

PLAIN GREEN-LEAVED.

FLOWERS SCARLET.

Eleanor (Bull).—Pale scarlet; very free and good.

Punch (Fraser).—A fine old well-known variety, now superseded by Warrior.

Warrior (G. Smith).—The best in this class; extra fine scarlet; good and robust habit; large trusses of large flowers, freely produced.

FLOWERS CERISE OR ROSY SCARLET.

Lady Middleton (Taylor).—Bright rose; a good well-known variety; very free-flowering, but bearing seedy trusses.

FLOWERS ROSE-PINK.

Advancer (Bull).—Bright rosy pink, self-coloured; dwarf and free-blooming.

Christine.—Pink; small trusses and small flowers, but very free; habit compact; a good old variety.

Christine Surpasse (Chater).—Clear pink; large flowers and moderate trusses; very free-flowering; good grower.

Maia (Rawson).—New; very bright magenta-pink; small trusses, but very free-flowering. A real acquisition.

Mrs. Pottle (George).—Bright pink, colour of Cleopatra; small trusses, freely produced; good; closely resembles Advancer.

Rose Queen (Osborn).—Pale pink; top petals white at the base; very free-flowering, but seeds too freely.

ZONATE, OR HORSESHOE-LEAVED.

FLOWERS SCARLET.

Aurora (Laxton).—Cerise-scarlet, in the same style as Excellent, but not so good.

Dr. Lindley (Bull).—Pale scarlet, with white eye; very free-flowering; good compact habit; a first-rate variety.

Etna (F. and A. Smith).—Good, free-flowering, scarlet; large flowers in fine trusses; habit excellent and free; a desirable variety.

Excellent (Carter and Co.).—Fine cerise-scarlet; good trusses and flowers very freely produced; a really first-class variety.

George Peabody (Veitch).—Extra fine bright scarlet; fine trusses and large well-formed flowers, freely produced well up above the foliage; pale-zoned leaf; compact habit; one of the best bedding varieties.

Landers (Charlton).—An improved Vesuvius in every respect as to growth, habit, and flowering.

Rev. J. Dix (R.H.S.).—Bright scarlet; flowers small, but the trusses large; very free-flowering, but soon running to seed; first-rate for early work; good habit.

Sambo (Downie and Co.).—Intense scarlet; good habit; very free and useful, but superseded by Mrs. A. Pirie.

Sydney Turner (Downie & Co.)—Bright scarlet, with pale eye; small truss, but finely formed flower; free and good habit; good of the type.

Vesuvius (F. & A. Smith).—Scarlet, of one of the best types; grown by all market gardeners round London for cut flowers and as a pot-plant.

William Underwood (Davie).—Pale scarlet, the top petals shaded; free-flowering, and of good habit, but superseded.

FLOWERS CERISE OR ROSY SCARLET.

Alfred (Pearson).—Bright carmine; good truss and flower; very free habit, and free-flowering; a good variety.

Charles Dickens (Bell & Thorpe).—Bright carmine, with cerise-scarlet edge; very distinct; truss moderate, flowers rather small, but freely produced; habit dwarf; a new and pleasing variety.

Crystal Palace Gem (Carter & Co.).—Clear rosy cerise; very free flowering, but rather seedy; fine habit, and a first-rate bedder.

Forester (Carter & Co.)—Pale rose; good flower, but small truss; very free-flowering; strong grower; a useful shade of colour.

Glory (Fraser).—Bright cerise; good flower and truss, and very free-flowering; moderate habit; really good.

Herald of Spring (Turner).—Same colour as Nora, but not so free; of straggling habit.

Ianthe (W. Paul).—Beautiful rose, shaded with carmine and magenta; quite novel; dwarf habit; flowers good in shape, but the trusses small.

Lucius (Bull).—Very bright cerise; a fine flower and good truss; a strong grower and very free bloomer; stands sun, wind, and rain better than any other of the same class; useful and first-class.

Nora (Bull).—Bright rose; large trusses; a very strong grower and free flowerer; good for back rows.

Princess of Wales (Mews).—Clear rose; very large truss and good flower; dwarf and compact habit; an excellent and first-class variety for bedding or pots.

Regalia (Turner).—Bright carmine rose of a beautiful shade; flowers large, trusses small, but very freely produced; dwarf and compact habit; a fine variety.

FLOWERS ROSE-PINK.

Blue Bell (W. Paul).—Magenta-pink, very bright, white on the upper petals; good flower and truss; free and good habit; a fine variety.

Beauty of Lee (Toole).—Very bright carmine-rose, white on the top petals; small flowers and truss; exceedingly pretty and compact in habit; pale-zoned foliage.

Mrs. Upton (Dodds).—Fine bright pink, white on the upper petals; compact and very free-flowering habit; an excellent variety.

Penelope (W. Paul).—A little paler than Forget-me-Not, with larger flowers and stronger habit; not so good as Mrs. Upton for effect.

Surpasse Beauté de Suresnes (Low).—Bright rosy pink without purple, and with white on the top petals; very large flowers, of fine substance, borne on stout footstalks in immense trusses, when grown in pots, but not good for bedding.

FLOWERS SALMON-COLOURED OR FLESH-COLOURED.

Jean Valjeans (E. G. Henderson).—Bright salmon; good truss and flower; strong grower, and free.

Mons. Barre.—Salmon shaded; very free and good; a strong grower.

Seraph (Downie & Co.).—Clear salmon, with white eye; free-flowering; dwarf and compact; quite distinct.

FLOWERS LIGHT, WITH DEEP SALMON OR ROSE CENTRE.

Amelina Grisau (Salter).—Pure white, with very bright salmon eye, clearly defined; dwarf, compact, free-flowering, and distinct.

Eugénie Mézard (Salter).—White, shaded with salmon, and deep eye; very free-flowering; dwarf and compact; one of the best.

Madame Werlé (W. Paul).—Pure white, with delicate pink eye; good flower, but small truss; very free-flowering, but not good for bedding; fine in pots, and distinct.

Rosebud.—White, with deep salmon eye; very free-flowering, distinct, free and good: dark-zoned foliage; one of the best.

Vestal.—Very similar to the last, but the zone on the leaves not so dark; good.

FLOWERS WHITE.

Madame Martha Vincent.—White; tall and free-growing, with good truss of fine flowers; free-blooming; style of White Perfection.

Purity (Bull).—The purest white; flowers fine, in good trusses; compact and robust-growing; the best of all.

White Perfection (J. F. Chater).—Pure white; tall, free-growing and free-flowering; a good useful variety.

MARBLED ZONATE PELARGONIUMS.

FLOWERS SCARLET.

Sheen Rival (Kinghorn).—Scarlet; flowers and trusses small; habit strong and robust; very free-flowering, but not good.

NOSEGAY AND HYBRID NOSEGAY PELARGONIUMS.

LEAVES PLAIN, FLOWERS SCARLET.

Orange Nosegay (W. Paul).—Bright orange-scarlet; small truss and flowers; tall slender growth, very free; foliage small and distinct.

Vulcan (Chater).—Crimson-scarlet; good truss and flowers; very free and hardy; strong growth.

LEAVES ZONATE; FLOWERS CRIMSON AND SCARLET.

Bayard (Pearson).—Fine crimson; small flowers, but good trusses, very freely produced; good compact habit; a first-class bedder.

Charlie Casbon (Casbon).—Brilliant scarlet; a very fine, free, dwarf variety, and a first-class bedder.

Countess of Strathmore (Downie & Co.).—Bright scarlet; small trusses, but free-flowering; very pale-zoned leaves; good habit.

Cybister (Carter).—Orange-scarlet; strong slender grower, and very free-flowering; a first-rate bedder.

David Garrick (Bell & Thorpe).—Crimson-scarlet; large flowers in moderate trusses; free-flowering, and of good habit.

Duke of Devonshire (Pearson).—Very bright crimson-scarlet; very large trusses of large well-formed flowers; strong, compact, good habit; very free-flowering. A really grand thing, and fine for pots.

Grand Duke (G. Smith).—Vermilion-scarlet, shaded with lake; fine truss and flower, and very free-flowering; moderately compact in habit, good; a fine bedder.

Harry Hieover.—Exceedingly dwarf; pale scarlet; small truss and flower, but very freely produced; a first-rate bedder for front edging.

H. M. Stanley (George).—Vivid crimson-scarlet; large flowers and very large trusses, produced on long footstalks; good strong compact habit; a new variety, in every way first class.

Hon. Gathorne Hardy (Downie & Co.).—Pale crimson; moderate habit; free-flowering, but superseded.

King of Nosegays.—Fine crimson-scarlet; good trusses; moderately compact in growth, and very free-flowering; good.

Lady Constance Grosvenor (Turner).—Fine orange-scarlet; small flowers, but good trusses; very free-flowering; dwarf flat growth; very effective.

Le Grand (G. Smith).—Soft crimson-scarlet; good flower and truss; very free-flowering; compact good habit; a fine bedder.

Louis Veuillot (Low).—Crimson-scarlet; very free-flowering; dwarf and good.

Milton (Pearson).—Crimson, extra large; immense trusses on long footstalks; a good formed flower; a very telling variety; fine for pots, but straggling as a bedder.

Mrs. Mellow (Pearson).—Brilliant crimson, dazzling; good flowers and trusses freely produced; moderate habit; fine for pots; first class.

Mrs. Vincent (Pearson).—Very fine crimson-scarlet; good trusses and flowers; very free and good; pale-zoned foliage.

Robert Bowley (Downie & Co.).—Bright crimson-scarlet; fine flowers and trusses; very free-flowering; a good habit; a first-class variety.

Soleil (Veitch).—Brilliant orange-scarlet; flowers small, but the trusses immense; a strong grower and very free-flowerer; a first-class bedder. The best of its colour for bedding.

Stanstead Rival (Downie & Co.).—Light crimson shaded with lake; large flowers in small trusses; very free-flowering; dwarf, moderately vigorous habit; a first-rate bedder.

Sultan (Downie & Co.).—Pale scarlet; large flowers in moderate trusses; dwarf and compact habit.

Thomas Speed (Pearson).—Crimson-lake; small flowers, in large trusses; moderately compact habit; free and first-rate.

Triomphe de Stella (Garaway).—Orange-scarlet; very dwarf habit; good flowers in small trusses; very compact, and very free-flowering; a first-class bedder.

Vesta (W. Paul).—Very brilliant crimson-scarlet; small flowers in good sized trusses; very free compact habit; a really first-class bedder, one of the best, and remarkably effective.

Waltham Seedling (W. Paul).—Bright crimson; small flowers, but good trusses; very free-flowering; habit long and slender; a fine bedder.

Wellington (W. Paul).—Magnificent, very rich deep crimson shaded; flowers very large, in immense trusses; strong dwarf grower, free-flowering. In Nosegays, the gem of the season.

FLOWERS CERISE OR ROSY SCARLET.

Amy Hogg (W. Paul).—Magenta rose; good flowers and trusses; very free-flowering, good habit, and free; a first-rate bedder.

Chilwell Beauty (Pearson).—Magenta rose; moderate habit and free-flowering; a good bedder. Very similar to Amy Hogg.

Clio.—Magenta-crimson with white eye; fine flowers, and good trusses; compact habit, and very free-flowering. One of the very best for pot culture, and distinct.

Indian Yellow (W. Paul).—Yellowish-salmon, distinct; good flowers in small trusses, but very free-flowering; good habit; a first-class bedding variety.

Lady Kirkland (Downie & Co.).—Bright purplish-rose; large flowers in immense trusses; very free-flowering; fine compact strong habit; the best bedder of its colour and class.

Laurence Heywood (Pearson).—Bright purplish-rose; large well formed flowers and trusses; a fine showy variety, the habit strong yet compact.

Masterpiece (G. Smith).—Cerise shaded magenta; large flowers and immense trusses; a strong good grower, and very free-flowering.

Violet Hill Nosegay (E. G. Henderson).—Lake rose; good flowers in small trusses, but very freely produced; dwarf and compact habit, in every way first-class as a bedder. The model of a bedding variety.

FLOWERS ROSE PINK.

Amaranth (Pearson).—Bright rosy-amaranth, quite a new colour; free-flowering; moderate habit; nearly plain foliage.

Florence Durand (Pearson).—Very bright magenta; large flowers but of little substance; exceedingly free-flowering, and of good habit; a promising variety.

Pink May Queen (Downie & Co.).—Very bright carmine; good flowers in immense trusses; very free-flowering, and strong compact habit; a first-class variety for bedding purposes or for growing in pots.

Welbeck Nosegay (Tillery).—Very bright carmine; very free-flowering; dwarf and compact habit; a good bedder, and very pretty.

IVY-LEAVED.

LEAVES GREEN.

Willsii roseum (Wills).—Bright magenta-rose; very free-flowering; dwarf compact habit; makes a very distinct feature amongst bedding Pelargoniums.

LEAVES VARIEGATED.

L'elegante.—White, very large flowers; foliage pale green, edged with white, changing to a beautiful rose in autumn; free trailing habit.

GOLD AND BRONZE.

Beauty of Calderdale (Wimsett).—Pale scarlet flowers, very freely produced; good robust habit; broad dark zone.

Beauty of Wolverstone (Wimsett).—Vivid scarlet flowers; large foliage, of the brightest yellow, narrow dark zone; very effective and distinct; strong, but compact growth.

Black Douglas (Downie & Co.).—Salmon flowers, freely produced; a good grower, robust and dwarf; fine dark broad zone, and very narrow yellow edge; first class.

Black Prince (Carter & Co.).—Good scarlet flowers; large foliage, with broad bold zone; very free-growing; first-rate.

Cedo nulli (E. G. Henderson).—Pale salmon flowers, with deeper centre; good broad bright zone; robust, yet compact in habit; good.

Cleopatra (Carter & Co.).—Flowers scarlet, of good form; bright red broad zone; free and good.

Emperor of Brazil (Downie & Co.).—Salmon flowers; a facsimile of Black Douglas, and, if different, not so good.

Goldfinder (F. and A. Smith). Carmine flowers; bright foliage, but washy, pale zone; very compact growth.

Golden Superb Nosegay (Sampson).—Purplish-crimson Nosegay flowers; dwarf spreading habit; a free-grower and free-flowerer; bright yellow foliage, with very pale zone; A 1.

High Admiral (E. G. Henderson).—Pale scarlet flowers; dark broad zone; a good grower, and first-rate.

James Richards (R. H. S.).—Bright scarlet flowers of good form, very free-flowering; style of Beauty of Calderdale, but neater and more evenly marked; first-class.

Kentish Hero (Downie & Co.).—Rosy-orange flowers; bright yellow dark-shaded zoned foliage; a good grower; one of the best.

Maréchal M'Mahon (Downie & Co.)—Scarlet flowers; without doubt the very best bronze zonal amongst the new varieties; very dark, broad, and very even zone; flat leaf; good, robust, compact habit; A 1.

Master Leonard (R. H. S.)—Bright scarlet flowers; narrow bright zone; distinct and pretty.

Mrs. Elliott (Downie & Co.).—Scarlet flowers; bright reddish maroon zone; good habit and free; first-rate.

Plutus (F. & A. Smith).—Bright salmon flowers; foliage lively yellow, with bright red zone; moderate grower, effective.

Reine Victoria (Downie & Co.).—Scarlet flowers; very large foliage, yellow ground, with bright broad zone; free; a first-class variety.

Rev. W. F. Radclyffe (Windebank).—Pale scarlet flowers; very dwarf flat habit; greenish yellow leaves, with narrow dark zone.

Sybil (F. & A. Smith).—Pale scarlet flowers; very dwarf and compact habit; very bright and broad zone; excellent: one of the best dwarf bedders.

The Moor (F. & A. Smith).—Pale scarlet flowers; dwarf and compact habit; good foliage, with broad shaded red zone.

VARIEGATED-LEAVED.

SILVER-VARIEGATED; WHITE OR CREAMY MARGIN, NOT ZONATE.

Albion's Cliffs (Chater).—Scarlet flowers; white-variegated; the strongest grower of the section; first-rate for large beds.

Alma (Turner).—Pale scarlet flowers; good flat creamy foliage; free and good.

Brilliant Superb (Parsons).—An improved form of the last, with better-defined variegation.

Flower of Spring (Turner).—Flowers rosy-tinted scarlet; good cream-coloured variegation; free-growing and compact; a first-rate bedder.

Miss Kingsbury.—Scarlet flowers; perhaps the best white-variegated variety grown for general purposes.

Mountain of Snow (Fraser).—Scarlet flowers; good white variegation; moderate grower and good; habit spreading.

Mrs. Lenox (Taylor).—Scarlet flowers; one of the best white-variegated varieties grown.

Princess Alexandra (G. Smith).—Scarlet flowers; white-edged foliage; free-growing; dwarf and compact in habit, very good.

Queen of Queens (Bull).—Very bright scarlet flowers; exceedingly free-flowering, the trusses standing well up; large cream-edged foliage; very free, and first-class.

Silver Chain (E. G. Henderson).—Scarlet flowers; cream-margined foliage; free and compact habit; a first-rate variety.

Snowdrop (Carter & Co.).—Brilliant scarlet flowers in small trusses; compact and moderate grower, with cream-coloured variegation; very good and distinct.

WHITE OR CREAMY MARGIN, WITH RED ZONE.

Glen-Eyre Beauty (E. G. Henderson).—Pale scarlet flowers; moderate grower, free and good; one of the very best; zone very bright.

Italia Unita (E. G. Henderson).—Scarlet flowers, freely produced; a moderate grower in its class, and still ranking amongst the first-class varieties.

GOLDEN VARIEGATED; YELLOW MARGIN, NOT ZONATE.

Crystal Palace Gem.—Carmine flowers, free-blooming; foliage yellow, with green blotch near the base; a free compact grower; one of the best bedders.

Golden Chain (Scott).—An old favourite; foliage clear green, with broad margin of golden yellow; very bright; a slow grower, but still unsurpassed in its way.

Golden Fleece (Scott).—Bright scarlet flowers; foliage large, very bright yellow, with small blotch of green on the lower part; a very dwarf and compact grower.

YELLOW MARGIN WITH RED ZONE.

Amy Richards (R. H. S.)—Scarlet flowers; good flat foliage with fine bright red zone; a good grower, free and first-rate; one of the very best.

Lady Cullum (E. G. Henderson).—Scarlet flowers; a variety always good and effective, whether bedded out or in pots; zone broad, dark, on a flat leaf; a good grower; first-class.

Louisa Smith (F. and A. Smith).—Scarlet flowers; foliage very round, with narrow bright zone; free-growing, of good habit, and distinct.

Macbeth (Bell & Thorpe).—Decidedly the gem of the season in tricolors; a strong robust grower; large flat foliage, with a very dark broad zone; altogether a grand thing.

Mrs. Pollock.—Still an old favourite amongst the free-growing bright-coloured tricolors; always effective.

Mrs. Turner (Turner).—Scarlet flowers; foliage flat, the centre small, the zone broad and brightly coloured; free-growing, compact, and good; distinct and worthy a place.

Queen Victoria (Perkins).—Pale scarlet flowers; broad leaf, with broad dark zone; a good grower and distinct.

Sir Robert Napier (Carter & Co.).—Flowers flesh colour; very dark and very broad zone, shaded with bright red; a first-rate distinct variety.

Sunset (E. G. Henderson).—Distinct and pleasing foliage, but of very bad habit and constitution.

YELLOW SELF-COLOURED.

Creed's Seedling (Creed).—Crimson; good flowers in small trusses, well up, and very freely produced; the foliage bright greenish-yellow; very free and compact habit; A 1.

Golden Superb Nosegay (Sampson).—This variety appears from a distance to come in this class, but upon closer examination is found to be zoned.

Jason (W. Paul).—Scarlet flowers, but not very free-flowering; foliage bright soft yellow; dwarf, compact, and first-rate.

Thos. Moore, in Proceedings of the Royal Horticultural Society.

SPRING GARDENING AT BELVOIR CASTLE.

While cold winds and driving snowstorms plainly indicated that we had scarcely escaped from the thraldom of winter, it appeared something more than tantalising to hear spring flower gardens described as masses of beauty; but at Belvoir, on the 17th of April, this was really the case. On approaching the grounds the noble castle of Belvoir arrests attention, on account of its commanding position, and also on account of its massive yet beautifully broken outline, thrown into bold relief by the sky background; in fact, its position is everything that a castle of such formidable dimensions and nobility of contour should have—a position doubtless equally appreciated by its ancient occupants when they bade defiance to their foes, and by the modern sight-seer who wanders thither in quest of the picturesque.

No special dispensation of climate seems vouchsafed to this particular locality; the road-side flowers are but Daisies—no banks of Ground Ivy or Speedwell to show that spring had roused her sleeping children even a week earlier than in Yorkshire; but it must be borne in mind that I am yet on the north side of the hills. I ought to have mentioned before that on each side of the castle knoll a range of hills trending south-west is covered with a dense wood of fine old timber, with a beautifully broken outline in the foreground, this wood rising in height a little above the base of the castle walls; and that on the north-east side there is a similar furnishing, only of much less extent, owing to the rapid declivity of the hills in that direction. Making one's way to the garden, which is situate on the south side, we pass in close proximity to the castle, where we have an uninterrupted view of it from the road. There it stands, combining the massive outline of the olden time with all the perfection of modern stonework; if it lacks the poetic halo of ruin and decay, it evidently makes amends for the deficiency by possessing all the necessaries for palatial life of modern times. The grassy slope up which we now look is broken into easy terraces, not sharp, angular formalities—these would be quite out of place—no long flights of steps, but quiet rounded lines, that sweep as it were from side to side, thus rendering the ascent for the pedestrian gradual and easy, but, from our point of view, showing no sign of a walk whatever. Descending some distance downhill, we reach the gardens, a peep at which, almost a square of some eight acres in extent, within the walls, and a run through the houses, was soon accomplished. But let us pass on to the primary object of my visit—the spring gardens. Our walk for about half a mile was through woods skirting the south side of the castle, which have undergone a good deal of thinning, the coarser undergrowth making way for such shrubs as are adapted for such semi-shaded localities. As we pass along one element of floral beauty crops up in the shape of large masses of Eranthis hyemalis, which, when in bloom, must have been lovely, and even now their dark green foliage and dense growth make a pleasing contrast with the lighter tints of the Grass; that, however, is a bit of nature's own flower gardening. So we proceed, until presently, in the distance far below us, we get a peep of a few irregular groups of flowers, almost shut out from view by intervening shrubs, and another hundred yards brought us to a delightfully secluded open space, shut in on all sides, except the sunny south, by masses of shrubbery. Here the walk, which hitherto followed in graceful curves the natural line of the hillside, wandered through groups of beds of various sizes and patterns, now bending one way, now another, as though it wanted to make the most of the little paradise into which it had led us.

Here, then, I am in the original spring flower garden, where the first happy attempt at Belvoir was made to blend the springtide of nature and art together; and how am I to describe it? Here of a truth I am at a loss; there is a beauty and charm about it that words cannot convey. Besides the sheltered character I have just alluded to, the natural lie of the ground is to the south, the surface diversified in a somewhat irregular manner—here a flat space, with a group of beds somewhat geometric in character; there a slight elevation crowned with a bed of irregular outline; or if, as in some cases, formal, then irregularity and diversity was given to it by the arrangement of the flowers. Here I must mention one all-important point; not a bit of soil was visible in the beds—no stiff formal cut margins and 6 inches of mother earth, to show that art had got the whip-hand of nature, were to be seen. The flowers themselves, with loving affection, hugged, as it were, the emerald sward. But how was the soil disguised? In some cases by thick planting, in others by covering its surface with the golden and glaucous forms of Stonecrop, and with various mossy and crustaceous Saxifrages; these, while answering the purpose of garnishings as it were, assisted materially in bringing out the beauty of colour in flowers amongst which they were interspersed. What can be happier than the idea of associating the blue wood Anemone with a golden carpet of Stonecrop? or lighting up, as it were, the lovely crimson Erica carnea with such golden surroundings? On this, and on the judicious way in which Mr. Ingram carries out such arrangements hinges in no small degree the strong spice of nature which is the charm of these spring-flower beds.

Many imagine that spring gardening must necessarily consist of early-flowering bulbs, which, to my mind, have never proved satisfactory. In the first place, there is a lack of foliage with many of them—then, again, there is a uniformity and sameness; and how short-lived is their maximum of beauty! Crocuses may be lovely for a few sunny days in March, but let the sun decline to beam forth, and their loveliness is hid, and soon their glory is departed. Squills are more lasting, and so are Hyacinths and Tulips; but here, in these beds, we find all these, not rising from a surface of naked earth, but from banks of Violets—the giant Czar with its dark blue flowers, or the Neapolitan with its more delicate tint, breathing a fragrance such as they alone can yield. Interspersed among them are fine tufts of the common yellow Primrose, intermixed here and there with the double Lavender and the white, the whole margined round with the Aubrietia, in many fine forms, such as Mr. Ingram has been enabled to obtain by a careful process of seeding and selecting. The effect of such an arrangement is grand in the extreme, and, as a crowning element, there is a sort of aërial addenda, rising 9 or 10 inches above the general surface of the bed, in the form of rich, bright, rosy Tulips, whose single blooms yet unfolded, borne upon slender, almost invisible stalks, arranged about 15 inches apart, gave a charm to the effect such as must be seen to be appreciated.

Take, again, another irregularly shaped bed, with glorious tufts of the old Saxifraga crassifolia or cordifolia, their massive leaves, almost semi-tropical, harmonising with their equally

Belvoir (from a Sketch by Mrs. Ingram).

massive trusses of soft pink blossom; bordering these and following out the irregular line is the Heuchera glabra, whose dark deep chocolate foliage contrasted well with golden Feverfew, between which again arose tufts of the common Anemone in its varied tints of blue, scarlet, and crimson, beaming in full expanded beauty. Then came a row of Polyanthus, of which Mr. Ingram possesses a splendid strain, some of them assuming the type of the Oxlip, only larger, and of a deep colour almost approaching to orange. Here you have no lack of variety. Outside of these came the old Arabis albida, which, like the Aubrietia, has improved under constant selection, acquiring compactness of growth and abundance of bloom, with a waxy substance of petal such as I have not seen before. Outside of all came the purple-leaved Bugloss, rising from a golden bed of Stonecrop. Here and there dotted over the surface were Hyacinths of a lovely magenta colour, which, protected by the foliage of the plants, rose well up above them, and gave an effect somewhat similar to the Tulips before described, but not so aërial. These descriptions doubtless indicate that a certain amount of formality is evident in the beds thus described; but, nevertheless, they do not strike the eye as formal. One bed in a secluded nook contained fine tufts of Christmas Roses, the beauty of which was, however, all but past. Amongst them I noticed, besides the old Christmas Rose and its larger varieties, H. olympicus, H. orientalis, H. colchicus, H. atrorubens, and H. atropurpureus; these were located together, being looked upon as fixtures. The same applies to the Hepaticas, which ought to form a marginal line round the group, the various colours alternating, as they do not flourish under the influence of repeated removals; and they would appreciate a permanent tenancy under their big relations. The Dog's-tooth Violet surrounding the margin of one bed, though out of bloom, had left in its mottled leaves a legacy which for beauty was not to be despised; Lamium maculatum was also largely used with excellent effect. Omphalodes verna, beside whose beauty even Myosotis dissitiflora must "pale its ineffectual fire," was well represented. In some of the little pincushion beds, covered with the crustacean Saxifrages, and where the major form of S. oppositifolia would look charmingly, I noticed beautiful tufts of the rarely-seen Polygala Chamæbuxus covered with bloom; this is largely grown, and used for spring purposes. Both Erica herbacea and its far finer and more compact variety carnea, as also the white form of the Mediterranean Heath, grown as they are here in compact tufts and well bloomed, have a wonderfully fine effect. The old wood Anemone in its double and rosy form, and also A. ranunculoides, apennina, and blanda, are all amenable to cultivation under the favourable circumstances just described. These, and many others I have named, when planted in a terrace garden, usually look the picture of misery—in fact, the formal, exposed flower garden we usually find adjacent to the mansion is not the place for spring gardening. Here, secluded and sheltered by trees and shrubs, the spring flowers are unmistakeably at home.

Before bidding adieu to the beauties of the original spring garden, I was somewhat surprised to find that its situation is within a stone's throw of the outworks of the old castle, as by passing through a thicket of shrubbery I found myself face to face with a set of bronze guns, pointing from the casemates of a plateau raised some 10 feet above the level of the Grass sward; the exterior of the plateau being also a level of Grass, unbroken by shrub or other adjunct, adding to the repose and nobility of the majestic pile of building. Nor did I really appreciate the charm of the flower garden to its full extent till my return, with the mind freshly imbued with the austere severity of the old castle. But a few yards of secluded walk, and the whole scene breaks on view—a charming kaleidoscopic picture, widening from a somewhat narrow embouchure, and embracing a tolerably extensive mass of the topmost twigs of the trees planted far below, rich with those indescribable purple tints that all plantations present when the first flush of sap rises responsive to returning spring. On reaching the edge of the plateau to descend, far below is another group of beds, smaller in extent, but from this bird's-eye point of view exquisitely charming. These were the beds that first attracted my attention in the distance; and descending by a wild path, partly steps and partly sloping walks, we reached the low level. By the way, I ought to have mentioned in the upper garden a raised bed of the beautiful rosy Rhododendron præcox, which had just passed its best with the exception of one plant; this was in perfection—evidently a distinct form, deeper in colour, more compact, and later in blooming than the ordinary R. præcox, and a variety well worthy of a name and a place in every spring garden.

Passing along in a south-western direction, we take the walk known by the name of the Duke's Walk; this skirts along the slope about half-way up. After walking a short distance, the clearance of the valley beneath—which was, up to a recent period, one mass of trees—has been considerable, and presents a magnificent site for a flower garden. A noble group of Birches, the most graceful of all trees, with their beautiful silvery stems, stand out objects for admiration at all times, but perhaps never more lovely than when their branches are festooned and pendent with catkins, giving just a sufficient amount of massiveness to their graceful outlines. These have all been preserved; and when, as will doubtless be the case at some future time, this extensive portion of the valley is broken up into an irregular surface round the margin, and groups of Rhododendrons are established on the knolls, fringed with Heaths and other dwarf American plants, contrasting with the smooth Grass surface, and enlivened here and there during summer with the bright denizens of the flower garden, we shall have all the elements of the beautiful on a grand and extensive scale. On the right-hand side the rising ground is as wild as Nature herself has formed it; but after some ten minutes' walk, we are admonished by a gate and a wire fence that we are about to enter some sacred enclosure. Scarcely have we passed the unpretending little entrance before we are made aware, by the presence of some goodly old Conifers and other trees and shrubs, which must have been established here at least fifty years ago, that we are in what is known as the Duchess's Garden. Prominent above all others here is an Araucaria imbricata fully 40 feet high, and beside it A. Cunninghami. In a situation, therefore, where Cunningham's Araucaria has withstood the vicissitudes of our climate for years, there must be some exceptionally favourable influences. Here, however, we must pause and look above and below. Above, as the eye ranges up the face of a wild bank some 50 feet high, jut out irregularly masses of rock; presenting the appearance of an old quarry, but covered with vernal beauty. Below, the surface of the ground is still wilder and more irregular; every here and there, where a little natural plateau has presented itself, it has been used for a few beds, filled to overflowing with blooming beauty. These beds, irregular in outline, appeared, as viewed from above, to indicate that the wildness of Nature herself was so lovely that Art dared with but trembling hand to poach on her royal preserves; but this is only in appearance, for I shall have now to show that Art and Nature have here been so happily blended together as to defy anyone to detect where the one ends and the other begins. Our path terminates in a fine old summer-house, notable for its ecclesiastically Gothic rustic character; windows in whose tracery the old Oak branches twist and twine in all sorts of wild vagaries; its thatched roof almost hidden beneath the drooping sprays of the Canada Spruce—a tree that, for light graceful elegance, bears the same relation to evergreens as does the Birch to deciduous trees, but more capricious in its tastes as regards soil and locality, and but rarely met with.

Let us now digress from the path, and, climbing upward, let us examine in detail the materials which cushion these projecting rocks with floral beauty. Our path now has lost its formal outline; it more resembles stepping-stones, between the interstices of which a stream of flowers is in continuous flow—here quietly gliding past some projecting stone in the form of a mass of the glorious vernal Omphalodes, studded with flowers of an azure blue, the brightness of which raises even a pinky blush on the adjacent Forget-me-Not; there tumbling in a mimic foam-like torrent over a rocky ledge is a mass of pure white Arabis, intermixed with the purple Aubrietia, hanging far down in graceful irregularity. But these beauties, however effective and lovely they may be, constitute, as it were, only the frame or setting of the picture. So wild and natural is the arrangement that one can hardly imagine it to be artificial. As we climb upwards we find spaces to the right and to the left—say two or three square yards in extent—with a nearly level surface, each filled with soil specially prepared to suit the plants they are intended for. Here we have a group of the diminutive Saxifrages nestling affectionately round their queenly representative, S. longifolia—there we have a mass of the rarer forms of Stonecrops; a similar space is devoted to the silvery Senecios—argenteus, incanus, and uniflorus; another to Silenes, with their pink and snow-white flowers peeping out of emerald cushions. Higher we reach a moderate extent of level ground, well prepared with bog and leaf soil; and here we have a group of Epimediums, from the midst of whose light green leaves, suffused in their younger state with that lovely pink tinge that gives such a charm to some of the Maiden-hair Ferns, arose the sulphur-yellow blossoms of E. pinnatum elegans by thousands, intermixed in wild profusion with the large white blooms of E. macranthum and various other species, growing with a luxuriance that could not be surpassed. This was alone a sight worth travelling miles to see. Similar localities are devoted to Trilliums and Cypripediums, and various other partial-shade-loving plants. Every here and there are nooks with a nice background of shrubs, containing rustic seats. Reaching the top, we follow a walk to a seat beneath a noble old tree, and, looking around from this elevated spot we catch a glimpse of the Abies canadensis already alluded to, with its graceful spray-like growth; beyond it a noble Portugal Laurel, with a well-formed stem some 2 feet in diameter, comes into view, and down the irregular slope beyond the walk leading to the summer-house are planted in prominent groups the mountain Bamboos, full of life and vigour to the very tips of their last year's stems, and some noble specimens of Arundo conspicua, fully 10 feet across, so distinct in their habit of growth as to be well worthy of association with the Pampas Grass and other plants of that character. This Arundo reminds one of a giant Renealmia rather than a Grass. Intermixed among these prominent irregularities were the spring-flower beds to which I have already alluded; and down in the valley far below we get a glimpse of the group of Birch trees, and of that open expanded glade, at present bare, but which in summer is a wilderness of wild Bracken. Beyond the summer-house, beneath the shade of giant overhanging trees, a space has been recently dedicated to Ferns; and here, beside our British Ferns, doubtless many of the semi-hardy sorts from New Zealand, Japan, North America, and Mexico will find a fitting home. Through a portion of this rockery Mr. Ingram intends some day to have a continuous stream of water, and with the addition of an artificial cave or two, the filmy Ferns will here find a fitting home; and possibly even the lovely Todea superba, of which I saw a number of fine plants in one of the houses, may be found under such favourable circumstances capable of withstanding the rigour of our climate.

Amongst the many usually tender shrubs planted out here, I noticed some fine plants of Camellias, studded with hundreds of buds, looking models of health and vigour, also some of the Sikkim Rhododendrons; and I have no doubt that the Chilian Lapageria would also thrive well, and have a glorious effect, festooning some of the old tree stumps that yet remain, and contribute not a little to the general grace and beauty of the scene. One word as to the mode in which the rockery has been made in the Duchess's Garden. The materials all belong to the locality, and consist of a slightly reddish marl stone, with horizontal fractures. In the disposal of these stones Nature's arrangement has been followed; they jut out here and there on their natural bed, sometimes singly, sometimes one on the top of another, the crevices between forming admirable root-hold for the plants. We have no attempt at impossible pinnacles, or aiming at effects that the materials do not justify. Mr. Ingram's knowledge of geology is such as to guarantee that no infringement of Nature's laws would be admitted.

Botanic Gardens, Hull. J. C. Niven.

Aster scorzonerifolius.—A new species introduced by M. Roezl, from the Sierra Nevada of California, resembling A. alpinus in habit, but differing from all other known species in its radical leaves. These are very long, ribbon like, smooth, entire, channelled, usually 5-ribbed, erect or nearly so, and longer than the stem, which is simple and about 10 inches high. Stem-leaves sessile, linear-lance-shaped. Flowers terminal, solitary (seldom axillary), large, of a pale violet colour with yellow disk. The plant is quite hardy.

NEW ROSES.

Of the new Roses that have already been shown this season, I must give the palm to Hybrid Perpetual Star of Waltham, a seedling raised by Mr. William Paul, of Waltham Cross. This is a very fine pale bright red coloured flower, very full, with great depth of petal, and an abundance of them in it; habit vigorous and free. As seen at one of the recent meetings of the Royal Botanic Society, this flower was as near perfection as a Rose could well be. Hybrid Perpetual Mons. Claude Levet is also remarkably fine; colour shaded rose, flushed with violet; large and full, and with a good free habit. Hybrid Perpetual Madame Jamain is another splendid flower, and its beautiful pale blush pink tint will be certain to render it acceptable to everybody. If the testimony of our leading rosarians be of any value, this will prove to be one of the best of the new Roses just being put in commerce. A thorough good Rose is Hybrid Perpetual Etienne Levet, and this so completely established its character as a good autumnal flower that its general good qualities may be taken for granted. This is of a shaded brilliant rose hue, flushed with violet; the habit appears to be all that could be desired. Tea Madame Cecille Berthod is a beautiful bright pale yellow flower, of remarkably fine build and substance, and a free grower; it is a variety showing the possession of a great deal of refinement. Tea Madame Camille has full and finely cupped smooth flowers, with a great depth of petal; the colour blush on the exterior, with a bright salmon buff centre. Tea Madame Jules Margottin is a charming Tea Rose, the circumference of the flower flesh white; the centre primrose and nankeen; in the bud state it is simply perfection; the habit is vigorous and free, and it has a most desirable upright growth. Quo.

SPRING-FLOWERING CLEMATISES.

At a meeting of the Royal Horticultural Society, on April 16, a group of new spring-blooming Clematises was staged by Messrs. Jackman, of Woking. There were seven finely grown and flowered plants, trained over oval wire frames, that were studded with large eight-petalled flowers of varying tints. Of these, four were deemed worthy of first-class certificates, viz: Fair Rosamond, silken white, tinted on the edges with pale soft mauve, and having purple stamens, flowers large in size, stout, well formed, and distinct; Stella, pale violet, paling off to lilac on the edges of the petals, and with a flame of pale puce along each, flowers large and of fine quality; The Queen, very pale mauve, with a slight pale green flame along each segment, large and very fine; and Vesta, pure white, with a fine primrose-green stripe along each petal, a beautiful white Clematis. The others were scarcely less inferior in size and beauty, and comprised Lady Stratford de Redcliffe, pale shining mauve, with a creamy flame along each petal, flowers of fine form, and vigorous habit. This variety will in all probability prove the precursor of a new race, as it has resulted from a cross between the spring-flowering C. Standishii and the summer-flowering C. Jackmanii, the principal change being in the habit, which is much freer and denser in growth than is usually seen in this section. There were also Maiden's Blush, pure white, with a flame of primrose-green on each segment, dark stamens, very fine; and Lord Derby, pale silken mauve, with a dash of cream along the centre of the petals, very delicate and fine. These will form valuable additions to this beautiful class of spring-blooming plants, many of which could be bloomed in the open air if planted in warm, sheltered, and sunny spots, and in large domains, It may also be stated that Messrs. Standish & Co., of Ascot, have raised a beautiful lot of seedlings from C. Standishii fertilised by other spring-flowering types. In many of these can be found what is much to be desired—flowers having a deeper hue of colour than is present in C. Standishii. We are now rich in white and pale flowers, also in those having most acceptable delicate touches of mauve. Tints of mauve deepening to violet, and again to blue and purple, are needed, and these Messrs. Standish bid fair to supply. They have a large number of selected seedling varieties that are full of promise. Any house in which these Clematises can be screened from the frost is a fitting place in which to grow them. It must not be supposed that an elaborate conservatory or greenhouse, furnished with a costly heating apparatus, is absolutely essential; such facilities as these would assist the development of the beauty of the plants, but are not essential. Liberal culture is essential, nay, indispensable. Whoever grows them in pots should use a rich soil in the first instance, and when blooming time comes there must be a liberal mulching with manure and occasional supplies of manure water. These assist the development of flowers having a fine texture and exquisite tints; and when such qualities as these are present, then the spring-blooming Clematis is seen to the best advantage. R. D.

OLD-FASHIONED WALLFLOWERS.

Amongst Wallflowers for ordinary purposes, nothing equals the sort grown in the market gardens round London. Great care is taken every year to select the darkest-coloured and earliest-flowered kinds from amongst the immense quantities which are grown, and to mark them, by inserting a peg alongside of such sorts as are selected for seed. The seeds are sown the following spring, as early as the weather permits, March being the common time, but if in February, so much the better. As soon as the plants are strong enough, they are transplanted to spaces under trees and between rows of fruit bushes, in lines a foot apart, and here they are allowed to remain. They grow pretty well in such a position, and in moderately open weather they come into bloom about Christmas, and sometimes earlier, and continue to flower well until May, and, if the weather be not too dry, well into June, when they are supplanted by hosts of other flowers. The plants are never preserved for more than the one season, as young ones are always the best. The continued selection of the finest and earliest kinds for seed has a material influence upon their time of flowering—a circumstance which I have fully proved. Last year I procured some much-applauded sorts from various sources, and in March I sowed them, together with some of my own old-fashioned market strain (I may say old-fashioned, for during my experience of twenty-seven years, I never grew any but the one kind, which was old-fashioned when I started), all on the same piece of ground, but each kind in separate patches. I transplanted them all under the same conditions, with the following result, viz.:—My own seedlings came into bloom in the last week of December, and have flowered well since, and with the exception of a bloom here and there amongst the others, it was more than mid-March ere they came into flower, my own old strain producing the most and best-formed flowers, and the darkest-coloured ones, with not more than half-a-dozen yellow-tinged flowers and not one striped one amongst them; whilst amongst the others one-third of the plants yielded yellow and crimson-striped or yellow blotched varieties, which, in the market, would not realise nearly the price of my own old-fashioned market-garden kind; consequently I must discard the new comers, and still retain my old and valuable strain.

A Middlesex Market Gardener.

Ramondia pyrenaica.—With reference to Mr. Palmer's inquiry (see p. 331), I beg to state that I have grown this plant in various situations, and have never found the least difficulty in its culture, except that it is impatient of excessive drought, and, under a hot sun, is liable to turn brown and lose its foliage, which weakens the plant for the succeeding year. It is doing fairly with me in an open rock border, composed of broken stones mixed with equal parts of sand, loam, and peat, and blooms freely in this situation, but as the flowers are very fugitive, its beauty soon passes away. In a cold frame it is one of the easiest alpines to grow. It likes thorough drainage and a cool moist situation. I repot it every year at midsummer and put about seven roots in a 12-inch pan. The soil I use consists of equal parts of loam and sharp sand, with a little peat or leaf-mould. I place the pans in the shady part of a deep pit; they are now quite covered with healthy rosettes of the handsome rough leaves, and in about six weeks will be adorned with a profusion of delicate mauve flowers. To preserve its beauty unimpaired it is necessary to keep the flowers from exposure to the sun, and also to avoid wetting them in watering. The flowering pans of Ramondia will be lovely objects for at least three weeks, and well worthy of a place in the conservatory or sitting room.—Geo. Maw, F.L.S., *Benthall Hall.*

Calandrinia umbellata.—For vivid beauty and brilliancy of colour there is nothing to equal this in cultivation. It is as cheap as the Wallflower if raised from seed; and moreover may be grown to perfection by the treatment which suits bedding plants—a treatment with which every person fond of gardening is now familiar. Its colour is a vivid magenta, open in the full sun to an almost inconceivable glow, yet soft and refined. In the evenings and in cloudy weather it shuts up, and nothing is then seen but the tips of the buds. It grows about 3 inches high, and does very well in any fine, sandy, peaty, or other open earth. It may be sown now or in spring, or indeed at almost any season that the seed comes to hand. It is a hardy perennial on dry soils and on well-drained rockwork, but for the bedding garden it is far best when raised every year from seed, kept over the winter in frames, and turned out the beginning of May in a free-growing condition. It looks best in small beds, but may be used with advantage as a broad edging to large ones. The Calandrinia may be sown in autumn with advantage, half the seed being kept for sowing early in spring. It should be raised on a gentle hot-bed to compensate for sowing so late, and is best kept in a snug frame or pit with warm aspect for the winter. In spring, very early, some seed may be sown in a Melon or Cucumber frame, or other warm structure, and brought on as fast as things may be at that season. I have seen it do beautifully in fissures of rockwork, and even remarkably well when sown in large beds in the open air in a nursery.—F.

Rocky Knolls.—In The Garden (p. 331) a rocky knoll in Osmaston Gardens is cleverly sketched, and the description rightly sets forth the pleasure that may be derived from the introduction of such little bits of scenery to our gardens when laid out and planted with taste. My object in thus writing is to state that I lately observed another rocky knoll in a pleasure ground in this neighbourhood, which struck me as deserving of notice. This was in the shape of a well-designed piece of rockwork of about 14 feet in height, and the same in breadth, planted with Berberis Aquifolium. The creeping roots of this Berberis had struck all through the mass of stones, producing quite a mass of fine green foliage; and, being in flower at the time, the whole looked, at a distance, like an immense plant. In some of the crevices where the Berberis had not spread, little patches of the Aubrietias were seen in full flower; and at the base of the knoll, in places on the Grass, the white-flowering Arabis presented itself in masses, as well as Primroses of different colours. This was seen in the shrubbery at the end of a walk, to which it formed a fitting and tasteful termination.—William Tillery, *Welbeck.*

Coloured Primroses.—This place has always been noted for its wild flowers, but more especially for its coloured Primroses, which this season have been truly lovely. I have been here seven seasons, but have never seen them so gorgeous before. Last summer suited them well, as they delight in shade and moisture, and the rains brought into existence a whole host of seedlings, which have flowered, though many of them are small plants furnished with not more than six leaves. I observe that there is a great improvement every spring in the fresh seedlings, both as regards colour and form; but this season there is more than an average quantity of the flowers first-rate. They are growing in a shrubbery not far from the garden, where they have received no attention; therefore the improvement in colour and form has been entirely effected by means of insect agency. —W. Allan, *Gunton Park.* [Along with this communication came a boxful of Primroses, all beautiful. In colour they ranged from delicate pink to brilliant mauve, and when seen *en masse* must be very effective.]

Oxalis corniculata rubra.—This is an exceedingly beautiful plant, forming patches of deep bronzy-red leaves, studded with golden stars. I do not know whether any use is made of it in an artistic point of view, as a carpeting plant. I once had a small round bed of it, edged with a silvery Saxifrage, and dotted over with Echeveria glauca, the effect of which was charming; but such is the astonishing fecundity of this plant, that I bitterly repent ever introducing it into the garden. Every part of my garden is now covered with it, even the gravel road and the walks. Every pot on every shelf in my little greenhouse swarms with it, and I fancy I can see some bits of it on the top of my house. Much against my inclination, I destroyed last summer thousands of this beautiful plant. Still it may have its proper place. Old quarries and rough rocky places, especially in a calcareous district, would suit it well, and their bareness might with advantage be hidden by a handsome plant which speedily covers the most unpromising surfaces.—Thos. Williams.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Tasmannia aromatica.—This interesting plant, usually grown in the greenhouse, has withstood the past winter at Bitton.

Solomon's Seal.—What a pity it is that the stately grace of this lovely plant is not oftener visible along shady walks and in the fringes of shrubberies in our gardens. It is one of the many plants that have been destroyed, to a great extent, by the mischievous system of digging every surface, which is so common in our gardens.—H.

Erodium guttatum—.This is one of the handsomest of the small-flowered species, and grows abundantly throughout Algeria from the southern borders of the Tell, at Boughari, to the Sahara, south of L'Aghouat, where it forms neat perennial tufts of glaucous leaves, covered with a profusion of rosy-lilac flowers with a dark purple centre, as big as a shilling.—G. Maw, *Benthall Hall.*

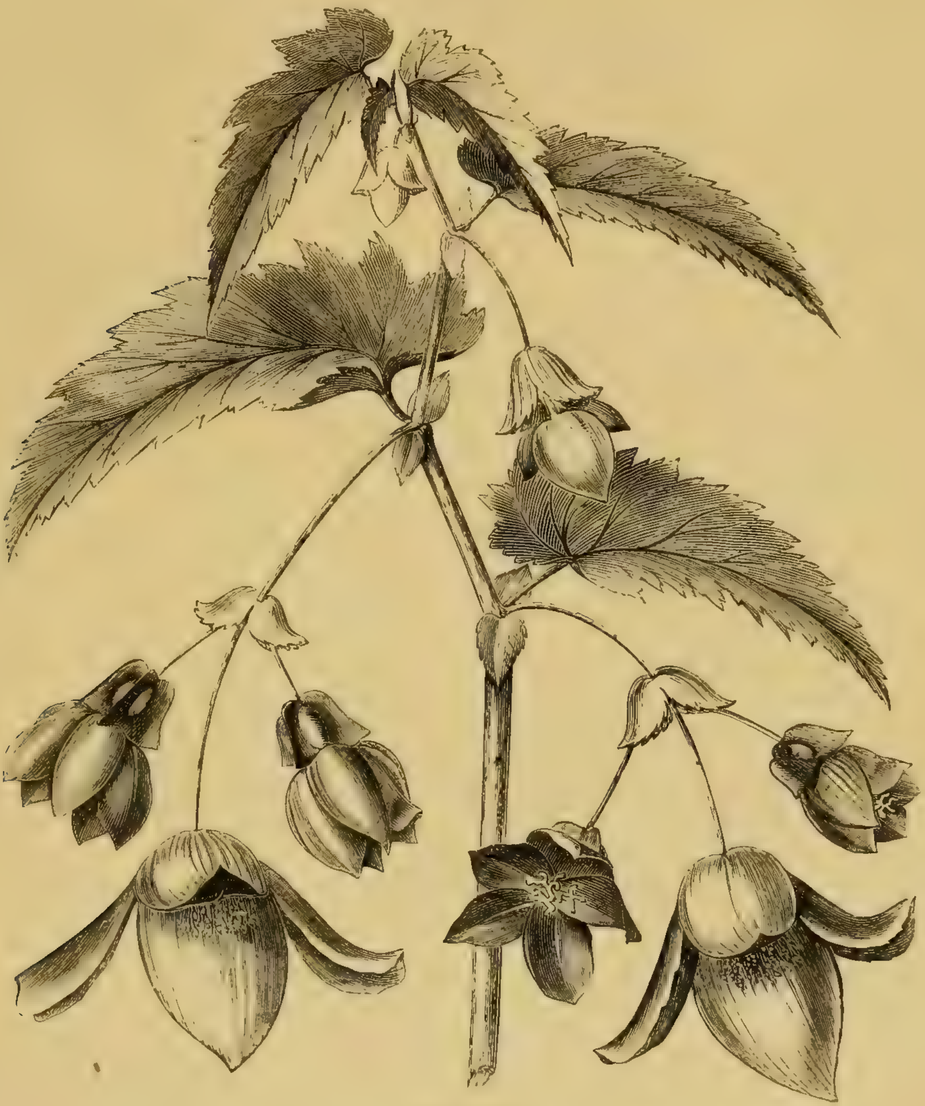
The Creeping Forget-me-Not (Omphalodes verna).—I find this to be the easiest of all plants to naturalise, and it is so pretty blooming throughout the spring months. I once thought it required moist free soils to become naturalised in, but find this is not so. Although it thrives best in a cool elevated region, it runs about freely in any wood or copse or shrubbery, in any part of the country.—W.

Idiotic Gardening.—I have been pained to see in this garden land of Kent many wretched examples of what are called "polychromatic beds." The hateful colours of their broken bricks, &c., are mingled with the delicate tints of spring and early summer flowers. The wretched example of Kensington has caused many to fancy they are gardening, when they are wasting precious time and energy by breaking up and carefully spreading forth in geometrical pattern broken bricks, &c., to produce ridiculous eyesores.—R.

THE GARDEN IN THE HOUSE.

BEGONIA SEDENI.

Begonias, as a rule, are amongst the finest of indoor flowering plants, and a large section of them is also remarkable for the beauty of their foliage. B. Sedeni is a garden hybrid, and, as regards flowers, one of the handsomest of the genus. Its blooms are individually large, of a bright magenta colour, and are produced in the greatest possible profusion. The leaves, which are also large, are of a shining dark green colour, with veins more or less tinged with red. In order to develope the full beauty of this Begonia, a little more heat than that of an ordinary greenhouse should be given when it is starting into growth, but afterwards it may with advantage be removed to a warm position in any ordinary greenhouse or conservatory. In autumn, when the plants show signs of decay, they should be kept rather dry, until after a week or two the stems may be cut off close to the soil, and the roots kept dry. As it is a tuberous-rooted kind it must be allowed to remain dormant during the winter, either in the pot in which it has been growing, or in sand, like Achimenes roots. In February or March it should be started, using well-drained pots containing a compost of loam, peat, and thoroughly decayed manure, mixed with some sharp river or silver sand. Small pots should be used at first, and the plants should be shifted as they advance in growth into larger ones, or they may be potted at once into 6-inch pots. If large specimens, however, are desired, they should be potted regularly, and when in sufficiently large pots they should be supplied occasionally with manure water. For indoor decoration, for which this Begonia may be made useful, 6-inch pots are sufficiently large, and in these excellent plants of it may be grown. It has flowered beautifully with Messrs. Veitch, of Chelsea. J. W.


Begonia Sedeni.

Novel Mode of Dishing Strawberries.—Procure a round dessert dish, and surround it with a tin rim 1 inch deep, filled with peat and sand. Then place on the surface small round stones of the size of pheasants' eggs, and plant between them Selaginella apoda, keeping it in the shade until the stones are half covered, then remove the stones and put in their place ripe Strawberries, which will make a dish fit for an emperor.—R. Gilbert.

THE KITCHEN GARDEN.

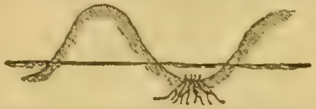
ASPARAGUS.

(*Continued from p.* 365.)

ASPARAGUS CULTURE IN FRANCE.

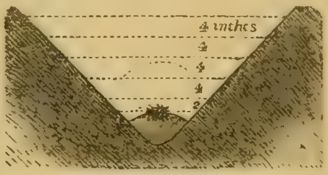
Asparagus is grown much more extensively and to a much larger size in France than it is in England. The country is almost covered with it in some places near Paris; small and large farmers grow it abundantly, cottagers grow it—everybody grows it, and everybody eats it. The system of culture is so essentially different from ours, and so successful, that it is desirable to make it fully known. Near Paris it is chiefly grown in the valley of Montmorency and at Argenteuil, and it is cultivated extensively for market in many other places. About Argenteuil 3,000 persons are employed in the culture of Asparagus. It is grown to a large extent among the Vines. The Vine, under field culture, is simply cut down to near the old stool every year, and allowed to make a few growths, which are tied erect to a stake; they do not overtop the Asparagus in any way, but on the other hand the strong plants of that show well above the Vines. It is not in distinct close lines among the Vines, but widely and irregularly planted. They simply put one plant in each open spot, and give it every chance of forming a capital specimen, and this it generally does. When the stems get large and a little top-heavy in early summer, a string is put round all, so as to hold them slightly together (the careful cultivator uses a stake), and the mutual support thus given prevents the plant from being hurt by wind in its prime. We all know how apt it is to be twisted off at the collar by strong winds, especially in wet weather, when the drops on every tiny leaf make the foliage heavy. The growing of Asparagus among the Vines is a very usual mode, and a vast space is thus covered with it about here. But it is grown in other and more special ways, though not one like our way of growing it, which is decidedly much inferior to the French method.

Perhaps the simplest method, and the most worthy of adoption, is to grow it in shallow trenches. I have seen extensive plantings that looked much as a Celery ground does soon after being planted, the young Asparagus plants being in a shallow trench, and a little ridge of soil being thrown up between the lines of Asparagus. These trenches are generally about 4 feet apart. Here, for instance, is a young plantation planted in March. In England, the Asparagus would be left to the free action of the breeze, but the French cultivators never leave a young plant of Asparagus to the wind's mercy whilst they can procure a bit of Oak stake about a yard long. But when staking these young plants they do not insert the support close at the bottom, as we are too apt to do in other instances, but at a little distance off, so as to avoid the possibility of injuring a fibre; each stake leans over its plant at an angle of 45°, and when the sapling is big enough to touch it or be caught by the wind, they tie it to the stake. The ground in which this system is pursued being entirely devoted to Asparagus, the stools are placed very much closer together than they are when grown among the Vines, say at a distance of about a yard apart. The little trenches are about a foot wide and 8 inches below the level of the ground—looking deeper, however, from the soil being piled up.



Common French mode of forming an Asparagus plantation.

The young plants are placed in these trenches very carefully. A little mound is made with the hand in each spot where a plant is to be placed, so as to elevate the crown a little and permit of the spreading out of the roots in a perfectly safe manner. In fact they seem to be about as particular as regards depositing the young plants in the first instance, as a good Grape-grower is about his young Vines. They plant in March and April—using any kind of manure that can be had, but chiefly here, so far as I could see, the refuse of the town—the ashes, old vegetables, rags, and other matters, that the people throw before their doors, and which the dust-carts take away in the morning. They are very particular to destroy weeds, and they also take good care to destroy all sorts of insect enemies in the mornings, especially during the early summer. Between the lines of Asparagus they plant small growing crops on the little ridges during the first years of the plantation, but are careful not to put the large vegetables there, which would shade and otherwise injure the plant. When they plant, they spread a handful or so of thoroughly-rotten manure over each root, and they repeat this every year, removing the soil very carefully in the autumn down to the roots, putting on them a couple of handfuls of rotten manure, and spreading the earth over again, so that the rain is continually washing nutriment to the roots. When doing this, they notice the state of the young roots, and where one has perished, or has done little good, they place a stick, to replace the plant the following March. Early every spring they pile up a little heap of fine earth over each crown. When the plantation arrives at its third year, they increase the size of the little mound, or, in other words, a heap of finely pulverized earth is placed over the stool, from which some but not much, Asparagus is cut the same year, taking care to leave the weak plants and those which have replaced others, to themselves for another year.



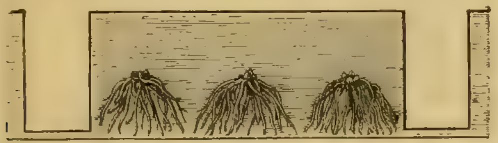
This figure shows the mode of planting and the depth of the successive annual earthings given to the Asparagus, as grown in France. After four or five years' growth the ridges disappear, and the highest points of the grounds are those over the crowns of the roots.

They cut the best of it when it is about an inch and a half out of the ground. Let us hear the French side as regards blanched Asparagus:—"In certain localities they do not yet value the distinction between blanched and green Asparagus, and occasionally prefer the last. That is an error very prejudicial to the consumer's interests. In the green Asparagus there is only the point edible; in the white it is often entirely so, and, moreover, it is infinitely more tender and delicate. All Asparagus cut when it is green is not fit to be eaten in the ordinary way, but may be used cut up small as an accompaniment to other dishes. To serve up green Asparagus is to dishonour the table! In the markets of Paris the green Asparagus is worth one franc a bunch, when the blanched is worth three francs; they do not eat it (the green Asparagus)—it serves for the manufacture of syrup of Asparagus.—V. F. Lebœuf."

When the plantation reaches its fourth year the little mound of blanching earth is increased to 15 inches in height, for then they expect to cut something worth while, and these mounds are made in the early part of March; and even after this, as they grow stronger the little mounds are increased; and they always keep a look-out for the feeble plants, with a view to replace them. To have Asparagus as it ought to be, they say you must cut every day, or every two days, according to temperature, so that it may be obtained at the right moment; indeed if they do not do this, the shoots become too high and too green. They place great importance on obtaining strong and healthy plants; and in the establishment which I visited they have three kinds, l'Ordinaire, La Hollande tardive, improved, and La Hâtive d'Argenteuil. The first is described as very fine, the second very strong, and the last is the earliest, most productive, and best. Of course there are various modifications of the plan just described, and in several instances I saw two rows placed in a rather wide trench in an alternate manner. As to the size and quality of the Asparagus produced by this method there can be but one opinion.

Concisely: the French mode of cultivating this delicious vegetable differs from our own diametrically in giving each plant abundant room to develope into a large healthy specimen, in paying thoughtful attention to the plants at all times, and in planting in a hollow instead of a raised bed, so that as the roots grow up they may have annual dressings of enriching manure. They do not, as we do, go to great expense in forming a mass of the richest soil far beneath the roots, but rather give it at the surface, which is consistent with the nature of the root.

The French mode of forcing Asparagus chiefly consists in digging deep trenches between beds planted for the purpose, covering the beds with the soil and with frames, filling in the trenches between the beds with stable manure, and protecting the frames with straw mats and litter to keep in the heat. In the beginning of November the pathways between the beds of Asparagus are dug up about 2 feet deep, and as much wide. Divide the soil coming from the pathway very carefully, and put about 8 inches thick of it on the surface of the bed. Fill up the trench with good new horse-dung, and place frames on the bed. The manure should rise as high as the top of the frames, and the lights be entirely covered with mats and litter, to prevent the heat accumulated in the frame from escaping. About a fortnight or three weeks after, the Asparagus begins to show itself on the surface of the bed. Many market gardeners cover the whole of the bed inside of the frame to a thickness of 3 or 4 inches with dung, to force the vegetation more quickly, but in this case the manure must be removed when the Asparagus begins to shoot. When the shoots are about 3 inches out of the ground they may be cut. The mats must be taken off in the daytime, but the heat must be well kept up or the roots and buds will fail to push. The beds are forced every second year only. The gathering of the Asparagus may continue for about two months, but no longer, or the plantation would be injured. When the gathering of the Asparagus is over, the frames and dung linings are taken away, and the soil which has been dug up from the alleys is put back again. The preceding applies to the forcing of the better qualities of Asparagus chiefly. A speciality is made of forcing the smaller sized Asparagus. It is in the garden of M. Caucannier, Place de l'Eglise, at Clichy, and a number of iron houses are there devoted to the culture. Indeed, if I mistake not, those in the Jardin Fleuriste are copied from them. There are frames within each house, just as in many propagating houses in England, and beneath them the Asparagus is forced for the markets, and in large quantities. The houses are heated by hot water, and the culture in other respects resembles that which is practised in forcing gardens in England—that is, when the plants are taken up to be forced indoors or in pits. The disturbance weakens the roots a good deal, and by this method the large table Asparagus is never forced. M. Caucannier and other growers produce it specially in a small state for soups, &c., but it is impossible to obtain in this way the large table Asparagus.



Preparation for forcing Asparagus. The trenches are dug out and filled with stable manure, the earth being heaped on the beds. These are covered with rough frames, up to the edge of which the heating material is piled.

ASPARAGUS PESTS.

Foremost amongst the causes which tend to diminish the yield of Asparagus deserve mention the luxuriant growth of fungus on the part of the plant above-ground, the attacks of caterpillars on its roots, and the depredations of the Asparagus beetle, Lema (Chrysomela) Asparagi, L. Of these the most serious evil is the parasitic fungus. With regard to the beetle alluded to, it is not so much the insect in its perfect form which proves so destructive, as the larvæ. Great damage is often done to the plantations by the Asparagus beetle (Crioceris asparagi), which abounds more in some seasons than in others, and is sometimes very destructive in one locality and almost unknown in others. The larvæ feed upon the leaves, perforate the buds, and even gnaw the rind of the stems. When the beetle first appears it may be controlled, but if allowed to become established the task is hopeless. Whenever the eggs or the larvæ appear, cut and burn the plants as long as any traces of the insect are visible. The larvæ, beetles, and eggs are generally found from the middle of June to September; its larva state continues only for about ten days, after which it descends into the earth to undergo its changes; and in three weeks the perfect beetle is formed, when it ascends the plants to deposit its eggs. The beetle, after eating into the vegetable, lays its eggs in the tender juicy portion of the stalk and leaves, and when the larvæ (the produce of the eggs) issue forth, they totally destroy those parts of the plant with which they come in contact. The most efficient plan of dealing with this insect-plague is to collect and "stamp out" the young brood, or better still, the full-grown beetles, before they have laid their eggs. The work of collection must, however, be carefully proceeded with, for with the slightest movement the beetles will fall down and conceal themselves in the earth. After a time they reappear, and, if permitted, will crawl again on to the plant, lay their eggs, and recommence feeding. In his war of extermination with the beetles, the Asparagus-grower has no better friends and allies than the birds. If he is wise, he does all in his power to attract and protect them.

Respecting the fungus, the first symptoms are observable in August. Small dark brown spots, which in a few days attain the length of a quarter to half a centimetre, appear on the stalks, and gradually assume a much darker shade. These spots are surrounded by the ruptured epidermis of the stalk, and are somewhat inflated. On close examination, vertical layers of small powdery spots are remarked under the epidermis; and it is their great accumulation here and there which causes the latter to burst. The injury done to the parts of the vegetable that are above the ground has an unfavourable effect on the roots, checking their development, and in the ensuing spring the yield of Asparagus will be found materially diminished by the premature death of many of the plants. As to the precise nature and proper designation of the disease, whether rust or another disease greatly resembling it, whether originating in (or greatly increased by) over manuring with nitrogenous fertilisers, and whether—as some maintain—never met with under the shade of trees, these are questions on which uncertainty prevails. Should it be ascertained on further investigation that the disease is not confined to Asparagus—and Dr. Birnbaum has noticed parasitic fungus almost identical in appearance on Couch Grass—the difficulty of combating the evil and preventing it from spreading will be proportionally increased. If it turns out to be rust, the spores alluded to are possibly the Teleuto, or winter spores, which first develop themselves in spring on another plant, and are afterwards found on Asparagus in the form of mycelium or spawn. On one point, viz., the dangerous character of the disease, there is unfortunately no room for doubt, and the grower has every reason to be careful that it shall not gain ground, or be imported into districts hitherto free from it. Above all things he must endeavour to prevent the discharge of the spores—the organs of reproduction—and, as soon as any signs of disease show themselves, his best course is to remove the parts attacked and burn them.

Wireworms are sometimes very destructive to the roots of Asparagus, but by means of dressings of salt, pieces of Carrots or Potatoes attached to a skewer, and buried a few inches in the ground near the crowns, they may be attracted and destroyed; these decoys should be examined once every two days or so. Snails and slugs often attack the plants in mild springs, just as they push through the soil, but they may readily be got rid of by dusting the ground with lime.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

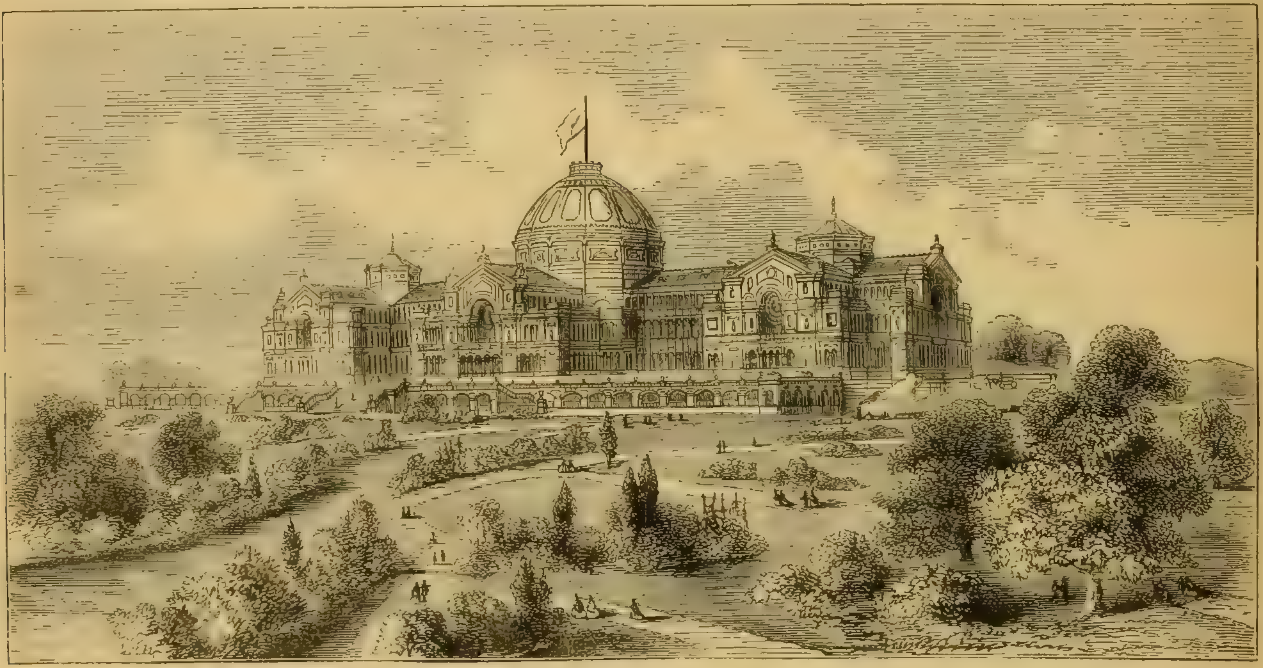
The Chinese Yam.—This plant, one of the many failures among the novelties offered for our kitchen garden, is of some use as an outdoor pillar or trellis plant, wherever a variety of such subjects is desired.

Climax Potato.—I have never yet seen this variety so handsome as Mr. Gilbert (see p. 269) describes it to be. Possibly there may be some mistake respecting it, as I am inclined to the belief that what he has for Climax must be Bressee's Prolific, which if not grown too large is very handsome, and a capital sort for purposes of exhibition.—A. D.

Sowing late Peas.—In thin light soils Peas do little good when sown in May and June, in the usual manner. The plan I have practised for many years is to take out narrow trenches, as for Celery, putting in the trenches 3 or 4 inches of good dung, digging up the bottom, and filling the trenches half full of soil. When the Peas are well up, add more soil until you get them in a level with the rest of the land. By doing this, and if a dry day, giving them one good soaking with water, and afterwards mulching them, they seldom suffer from drought.—R. Gilbert, *Burghley Gardens.*

THE OPENING OF ALEXANDRA PALACE GARDENS.

On this day week, the 24th inst., a great flower show takes place here, and from that date, let us hope, may commence the opening of a long and prosperous career for this important public garden. We looked over the grounds the other day, and were very much pleased with the preparations for flower shows and horticulture. There is already erected and in full working order, one of the best constructed groups of glass houses we know of, quite a village of glass. To these houses we shall probably again return. The great flower show will be held in the transept of the palace, an excellent position for a flower show. The arrangement proposed by Mr. McKenzie is a novel one; the most important plants and groups of plants will be grouped in a series of large and massive tazzas and vases running the whole length of the transept. As we propose to have an illustration showing the effect of these, we reserve further comment on them for the present. There is an excellent collection of American plants from Mr. John Waterer, of Bagshot, who for so many years has sent his fine and well-grown collection to the Botanic Gardens in the Regent's Park. This collection is arranged in a large tent, and will form an attractive feature in the grounds. As the prizes for the first great show are very large, and, in consequence, the show likely to prove one of the most important ever held, our gardening readers will find it well worth a visit. To the general public, the noble views which the gardens command of one of the most picturesque suburbs near London, and of London itself, must make Alexandra Palace well worth a visit, even if there were no other attractions there. Many of our readers will be pleased to learn that near the glass house department there is a piece of ground of some 15 acres, of which it is proposed to form an experimental and ornamental garden.



Alexandra Palace and Gardens.

Influence of different Occupations on Health.—A recent paper read to the Institute of Actuaries of Great Britain, on this subject, shows the ratio of mortality per thousand persons from 25 to 60 years of age to be of gardeners, 10.4; masons, 17.6; beer sellers, 21.5; wine and spirit merchants, 24; inn and hotel keepers, 27. Between the ages of 45 and 65, 32.2 hotel keepers die for every 14.5 gardeners.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Pleasure Grounds.—Amongst the most ornamental of shrubs at present in bloom are the Pyrus Malus floribunda, which bears a profusion of reddish flowers, and Cytisus præcox, plants of which, no matter how small, appear this year to bend under literally a load of cream-coloured blooms. Rhododendrons, Azaleas, flowering Currants, &c., are also in great beauty. Roses are covered with flower buds. Pines are beginning to grow, and in some cases, have been nipped by frost; Grass lawns, too, look beautifully green. Dead blooms under Cherry and other trees should be swept up; indeed, mowing, sweeping, hoeing, raking, clipping Grass edges, tying in shoots of Clematises and other climbers, and removing decayed flowers and seed-vessels from early Rhododendrons and Azaleas, form the principal operations in pleasure-grounds at present.

Herbaceous Plants.—Among plants now in flower is Iris nudicaulis, a dwarf young free-flowering blue kind; various forms of pumila are also blooming well, as are likewise Pansies and Violas of different sorts. Of these, cuttings should be put in under hand-lights in the open border, and seedlings and early-struck cuttings of them should be transplanted. Double-flowered Daisies of various colours are amongst the hardiest of spring flowers and the most easily managed, and their continuity of blooming is almost equal to that of Pansies. Now, although in their greatest perfection, they must in many cases be removed to make room for the summer half-hardy bedding plants; therefore lift and divide them, and transplant them in nursery lines in the reserve garden, where, if well watered and partially shaded with branches or otherwise, they will soon start again into growth, and afford many blooms that will come in usefully for cut flowers. Saxifrages are seldom used except in the herbaceous border, properly so-called, and as alpines, and as they are now coming into flower in quantity, they must be left undisturbed; they are, however, benefited by a mulching of decayed leaf-mould, which not only contributes nutriment to the plants, but saves them from drought. In the case of the fine-leaved kinds, do not permit them to flower, as it spoils their beauty. Ranunculuses and Anemones, now everywhere very pretty, should have their flowers picked off when they begin to decay. Scillas of the sibirica, bifolia, and amœna class, are ripening seed plentifully, which should be carefully preserved and sown as soon as gathered, or in the following spring. As these are self-sowing plants, the ground in their immediate vicinity should not be hoed but hand-weeded, so as to preserve the seedlings unhurt. Scilla campanulata, nutans, and their varieties are now at their best, and fine ornaments they are, for, being hardy, free-flowering, beautiful, and easily accommodated, whether in the border or shrubbery, they are suitable for every garden. Narcissi past flowering are best left undisturbed until early autumn, if possible, but, if it is necessary to remove them at once, lift them carefully without mutilation of root or leaf, and transplant them in the reserve garden, watering them well, and shading them for some time afterwards with boughs, mats, or canvas. Of this great family, N. triandrus, though little known, is one of the most ornamental, being a small-leaved kind, with bright single canary-coloured blooms, that appear almost before any of those of the other members of this genus; and now that Narcissi blooms are about over for a season, these are still in perfection. If bushy plants of Antirrhinums are required, the main spike should be pinched out, but if early flowers are wanted, leave them alone. Divide and transplant, like Violets, the runners of Omphalodes verna; they enjoy a shady position. O. Luciliæ is one of the finest of our hardy garden plants, its light blue or mauve-coloured starlike flowers being just now exquisitely beautiful; it prefers a more open position than O. verna, which is quite at home in a semi-wild state, *i. e.*, amongst Grass, broken or decaying branches, and leaf-mould; indeed, it is frequently found in better condition near the edge of some rubbish heap than in the most cared-for positions.

Specimen Herbaceous Plants.—If for exhibition purposes these are generally grown in pots, and to have them well established they should have been potted last year. The pots should all be of one size, say 8, 9, 11, or 12-inch pots, as may suit special requirements. In order to have the pots well filled it may be necessary to insert therein several plants together, especially such small kinds as Aubrietias. Keep them at present in cold pits and have the pots plunged in cocoa-nut fibre or coal-ashes. If the flowers are backward keep on the sashes, but tilt them up a little, so as to admit plenty of air. The following are commonly used for exhibition purposes, viz., Veronica repens, Aubrietias of different sorts, Delphiniums, Tradescantias, Irises, Coronilla montana, Cheiranthuses, Dicentra spectabilis and eximia, Centranthus ruber, Iberis coreæfolia, Astilbe japonica, Spiræa palmata and venusta, Erodium Manescavi, Betonica grandiflora, Aquilegia cærulea, californica and glandulosa, Campanula persicifolia coronata, Pyrethrum roseum fl. pl., Lychnis viscaria fl. pl., Phlox decussata, and alpine varieties, Primulas of sorts, Statice latifolia, and others.

MARKET GARDENS.

The parching easterly winds of a fortnight ago did much injury to crops in general; newly planted Lettuces had a hard struggle for existence, and many of them succumbed. French Beans planted out from frames have suffered considerably, and even Cauliflowers and Cabbages newly planted have not escaped unhurt; indeed, before the rain came, means of irrigation being at hand, the water was turned on, and half a pint or so given to each Lettuce and Cauliflower plant as it was committed to the soil. In lining off a field for these, mark off precisely the distances at which the rows are to be apart; one man should then tread on the line just before the marker, and another should pull the marker along, thus four or five rows are marked at one time. This is not necessary the second time, for the man with the machine can come back pretty accurately without the line being set; but the third time the line should again be set, not because it is absolutely necessary, but to prevent bends in the field; so that one setting of the line is only required for every second draught of the rake or marker. In dry, rough land marking is hard work, especially if the drills must be made deep. Ridges for the first crop of Celery must now be formed about 5 feet apart, by casting out a trench about 8 or 9 inches deep, and putting some manure therein and digging it into the soil. On the ridges between the trenches scatter thinly some horn shavings, if they can be got, mixed with horse droppings, and plant Cauliflowers thereon. A top-dressing of this manure is very good for Cabbages and Cauliflowers. Fully expose Celery in frames, and supply water to plants in the open beds. Draw an iron-toothed rake over the drills containing French Beans, Beet, Mangolds, Peas, and Potatoes, so as to permit an easy egress of the shoots. With pieces of matting, tie Cabbages and Cos Lettuces, so as to cause them to heart more freely. Place wooden pegs beside the finest Cabbages, the heads of which may be removed for market, but the stumps retained for seeding purposes. Hoe and weed Onions, thin Parsnips, and also the earliest crop of Beet. To Cucumbers admit air but sparingly whilst the cold is so great, pinch the shoots as required, water well, and protect the frames at night with plenty of litter. Plant out Vegetable Marrows under handlights and vegetable baskets, and protect them well with litter, especially those under the baskets. Before planting them holes should be made, and a barrowful of fermenting manure put therein, over which some soil must be placed; the plants may then be covered with handlights and litter. Expose as freely as possible Tomatoes in pots and frames, and clear away Mushroom ridges, unless required for growing Tomatoes against.

SOCIETIES, EXHIBITIONS, &c.

ROYAL BOTANIC SOCIETY.

(May 14 and 15.)

The first of this society's great summer exhibitions this season took place on this occasion, and was favoured with dry weather, though cold. The exhibition itself was most attractive, the great conservatory particularly gay, and the grounds pleasant, as one might expect at this season of the year. Their Majesties the King and Queen of the Belgians, Prince and Princess Teck, and other important personages, honoured the exhibition with their presence on the morning of the first day.

Stove and Greenhouse Plants.—These were well represented. In the class for nine, Mr. Baines, of Southgate, was first, with immense plants of Eriostemon neriifolium, E. cuspidatum, Azalea Duc de Nassau, carmine; Azalea magnifica, a cloud of pure white; Boronia pectinata, Aphelexis macrantha purpurea, Erica Cavendishii, E. ventricosa coccinea minor, and the finest variety, as well as by far the finest specimen, of Anthurium Scherzerianum in the whole exhibition. These plants, especially the hard-wooded greenhouse ones, were from 4 feet to 6 feet in diameter and of proportionate height. Mr. Ward, of Leyton, who was second, had somewhat similar plants, with the exception of a specimen of Statice profusa some 4 feet in diameter, and laden with bloom. In this class Mr. Herrington and Mr. J. Wheeler had equal third prizes awarded them; and, although their plants were smaller than those of their more successful competitors, they were, nevertheless, well-grown and flowered. In the amateurs' class for six Mr. Baines was again first, with a fine group, in which was a large specimen of Ixora coccinea, with trusses of bloom some 6 or 8 inches in diameter; also a plant of Hederoma tulipiferum, nearly 6 feet through and 4½ feet high; Azalea Distinction, a plant of Boronia pinnata about 4 feet through, and the same in height; and a very large specimen of Erica Cavendishii. The second prize in this class was awarded to Mr. Chapman, Rugeley, in whose group was a plant of Pimelea spectabilis, 5 feet through and a little less in height, quite a mass of bloom; also some good Chorozemas, a fine plant of Clerodendron Balfourii, a Heath, and an Azalea. Mr. G. Wheeler, Regent's Park, was third, with plants of a similar description. In the nurserymen's class for six, Mr. B. S. Williams, Upper Holloway, was first with Acrophyllum venosum, Aphelandra macrantha purpurea, Polygala acuminata, Azalea Stella, Anthurium Scherzerianum, and a large Heath, all large and well-bloomed. Messrs. Jackson & Son, Kingston, were second, with a fine collection, in which was a grand plant of Pimelea Hendersonii; also a well-bloomed example of Rhododendron Countess of Haddington. Mr. Wm. Cutbush, Barnet, was third.

Orchids.—These were unusually fine, for not only were the specimens large, but they were uncommonly well-flowered. In the amateurs' class for the best single specimen, Mr. James, Isleworth, was first, with a plant of Cattleya Mossiæ, having some two and a half dozen flower-spikes on it in full perfection; Mr. Chapman was second with a splendidly bloomed plant of Phalænopsis grandiflora; and Mr. Ward, of Leyton, was third with Oncidium ampliatum majus. The best specimen Orchid in flower from nurserymen was Dendrobium infundibulum, from Messrs. Jackson & Son, with twenty flower-spikes on it. The first prize for nine exotic Orchids was won by Mr. B. S. Williams, in whose group was a superbly bloomed plant of Cypripedium caudatum with nineteen flowers on it, C. barbatum superbum with some five dozen blooms, Cattleya Mossiæ with twelve flower-spikes, Saccolabium retusum with four flower-spikes, a plant of Phalænopsis grandiflora, and some Vandas. Mr. Wm. Bull Chelsea, was second, and Mr. G. Wheeler third. For six Orchids, Mr. Ward was first with Phalænopsis grandiflora, having three large, compactly-set flower-spikes; a plant of Oncidium sarcodes, having three very large and well-furnished flower-spikes; Cypripedium villosum, Dendrobium nobile, Lycaste Skinneri, and a fine plant of Odontoglossum Phalænopsis. Mr. Hill, The Poles, Ware, was second with the extremely beautiful Dendrobium Falconeri, furnished with thirty expanded flowers, and several unopened buds; Cattleya Skinneri, with nine flower-spikes; Vanda suavis, an immense plant, with eight flower-spikes; and one of V. tricolor, with seven spikes; a Phalænopsis amabilis, and an Odontoglossum luteo-purpureum. Mr. T. Godfrey, Ankerwycke, Staines, and Mr. J. Wheeler were awarded equal third prizes.

Roses.—Those furnished by Messrs. Paul & Son and Mr. Turner were in splendid condition, both as respects fine foliage and brightly coloured flowers, of which there were from four to seven dozen on each plant, the plants themselves measuring from 4 feet to over 5 feet in diameter. Mr. Turner was first in the class of six kinds, with Celine Forestier, President, Mad. Victor Verdier, Charles Lawson, Souvenir d'un Ami, and Souvenir de la Malmaison; Messrs. Paul & Sons were second. For nine Roses, distinct, Messrs. Paul & Sons were first, with magnificent plants, and the same firm were also first in the class of twenty Roses in 8-inch pots, the other successful exhibitors being Mr. C. Turner and Messrs. Veitch & Sons.

Azaleas.—These comprised some good kinds as well as large and well-flowered plants, though in point of size they were scarcely so large this season as we have seen them in former years. In the amateurs' class for six Mr. Chapman was first, with Leopold the First, Mars, Juliana, conspicua purpurea, lateritia, and President; Mr. G. Wheeler was second, and Mr. Herrington third. In the nurserymen's class for six Mr. C. Turner was first, with Miltoni, Hooibrunkii, Flag of Truce, Reine des Roses, Marie Vervaene, and Wm. Bull; Messrs. Jackson & Son and Messrs. Lane & Sons were second and third. For twelve Azaleas Mr. C. Turner was first, with a group of small but finely managed plants; other winning groups came from Messrs. Ivery & Son, Dorking, and Mr. G. Wheeler. In the amateurs' class there were also some fine plants in 12-inch pots. Beauty of Surrey, exhibited by Messrs. F. and A. Smith, of Dulwich, was literally a gem, its flowers being pure white, of good substance, and its shape exquisite.

Rhododendrons.—These consisted of forced hybrids, the first prize for twelve plants being won by Messrs. Lane & Sons, with some well-flowered plants, and the second by Mr. G. Wheeler. For nine plants Mr. Roe, Roehampton, was first, and Messrs. Lane & Sons second. Some nice plants of R. Countess of Haddington and of fragrantissimum were exhibited amongst miscellaneous collections of plants.

Heaths.—These were good, though, owing to the schedule specifying that the pots, except in one class, should not exceed 12 inches in diameter, there were fewer large specimens than usual. In the amateurs' class for twelve, Mr. Ward was first, with splendid plants, amongst which were Erica profusa, tricolor elegans, and ventricosa grandiflora; Mr. G. Wheeler was second. For twelve Heaths from nurserymen, Messrs. Jackson & Son were first, with E. Lindleyana, odora rosea, depressa (fine), ventricosa grandiflora, v. minor, tricolor, Wilsoni, Devoniana, mundula, Victoria, and Cavendishii; the same exhibitors were likewise first for half a dozen specimens, and Mr. Ward was second.

Pelargoniums.—These were excellent; indeed, the specimens of show Pelargoniums exhibited by Mr. Ward were models of skilful cultivation; they were in 8-inch pots, trained almost flat, from 4 to 5 feet in diameter, and literally smothered with flowers, open and opening. To these a first prize was deservedly awarded; the kinds were Alabama, Rose Celestial, Lady of the Lake, Atalanta, Royal Albert, Patroness, Lady Canning, Emperor, and Rob Roy. Mr. James also exhibited successfully in this class. From Mr. W. Bull and Mr. T. Pestridge, Uxbridge, came collections of beautiful tricolor Pelargoniums.

Calceolarias.—Of these there were only two groups, but both were particularly fine; that from Mr. James contained a first-rate pure yellow large-flowered kind called Canary, the other group came from Messrs. Dobson & Son.

Liliaceous Plants.—Mr. Ware, of Tottenham, exhibited a group of these, in which were Scilla hyacinthoides and others, Tulipa Breyana, Fritillaria persica, &c. Mr. C. Turner showed some well-flowered plants of Lilium auratum.

Hardy Herbaceous Plants.—Of these there were some interesting collections: the first prize for twelve kinds was won by Mr. Parker, Tooting, with Alyssum orientale, Pæonia officinalis fl. pl., P. tenuifolia fl. pl., Phlox frondosa, P. subulata, Aubrietia purpurea grandiflora, Iris nudicaulis, Astilbe (Spiræa) japonica, Cheiranthus Dillenii, Primula cortusoides amœna, Iberis correæfolia, Veronica repens, and Convallaria majalis variegata. Mr. Ware was second, and Mr. G. Wheeler third. Various groups of hardy flowering and ornamental leaved plants were shown by Mr. Ware, and amongst them, in addition to many others, were Viola lutea major variegata, a yellow variegated-leaved kind; Mimulus cupreus, a red-flowered, very dwarf pretty plant; Smilacina bifolia; Primula involucrata; the new Aquilegia aurea; Delphinium nudicaule; Erythrina Cottyana, a red-flowered, attractive sort; Oxalis floribunda, bearing a great profusion of white flowers; Erinus hispanicus, a reddish-purple flowered, pretty alpine or wall plant; Orchis fusca, well bloomed; and Gentiana verna.

Bedding Plants arranged for Effect.—In the centre of the exhibition was a group of hardy plants, tastefully arranged, from Mr. Ware; set within an edging of Grass was a band of Phlox frondosa; then belts of Pansies, Polyanthuses, Succulents, Pinks, Carnations, and other spring flowers, relieved here and there by a few taller growing, graceful plants, some of which were also placed at the back. A green groundwork was obtained by means of a free use of Sedum acre and of Spergula pilifera, thus relieving the eye from too dense a mass of colour. Messrs. E. G. Henderson and Son showed several boxes of cut flowers of Tulips and spring flowers in this class.

Stove and Greenhouse Plants arranged for Effect.—Messrs. Rollisson and Sons, Tooting, who were first in this class, showed an extensive collection of excellent and valuable plants. Towards the back were placed tree Ferns, Palms, and tall Dracænas; and in front, tastefully intermingled amongst other things, were specimens of Alocasia Lowii, Adenandra fragrans, Cupania undulata, a good plant of the variegated variety of Pandanus javanicus, Kentia Forsteriana, and other small Palms; Saccolabium ampullaceum moulmeinense, Dendrobium Devonianum, and, as a margin in front, the beautiful silvery-leaved Echeveria pulverulenta. Mr. E. Morse, Epsom, was second, with a good group of Palms, Ferns, Heaths, and many other flowering and fine-leaved stove and greenhouse plants, particularly a large specimen of Ananassa sativa variegata.

Palms and Ferns.—Mr. B. S. Williams showed a fine group of Palms, as did also Mr. T. Godfrey and Mr. Wm. Cutbush, of Barnet. Of Ferns, Mr. B. S. Williams had a grand group, consisting of Cyathea princeps, Cybotium regale, Dicksonia antarctica, Gleichenia Speluncæ, and G. decarpa, and a fine specimen of Adiantum Farleyense. Other contributors also showed nice groups, amongst which were several kinds of Adiantum, Blechnum, Lomaria, and filmy Ferns, together with several kinds of tree Ferns.

Clematises.—Mr. Noble, of Sunningdale, Bagshot, furnished a large collection of early-blooming kinds, including not only the older varieties, but also several new kinds of great merit. Worthy of particular mention amongst the latter was one called Charles Noble, a decided acquisition, with large purplish violet flowers, tipped with red; this promises to take the same place amongst early-flowering sorts that C. Jackmanii occupies amongst late-blooming kinds. Early Clematises are for the most part of a pale lilac or white colour; but in Charles Noble we have very dark coloured, large, and fine flowers. Other new kinds consisted of Mrs. Villiers Lister, a fine white, with a purplish pink bar near the base of the petals; Madame Albani, a well-formed, large lavender-coloured flower; Mdlle. Torriani, a beautiful blush flower; and Mdlle. Kellog, a pure white, well-formed flower, with blunt petals—a fine variety.

Miscellaneous Plants.—Mr. B. S. Williams staged an effective group of Ferns and Orchids, amongst which were good plants of Miltonia bicolor, Saccolabium retusum, with two fine spikes, and a profusely-bloomed plant of Maxillaria lutea alba. Messrs. Lucombe, Pince, & Co., exhibited a group of Heaths, Dracænas, Dieffenbachias, Azaleas, &c., and a fine example of Maranta tubispatha; also another large collection of Ferns and Orchids, and a small plant of Puya Altensteini in flower. In another miscellaneous collection of plants furnished by the same exhibitor were the beautiful Clianthus Dampierii in flower, a pretty plant of Pandanus Veitchii, a nice specimen of Ananassa sativa variegata, Marantas, Higginsias, Palms, &c. An extensive group of Roses was shown by Messrs. Lane & Sons, and a group of miscellaneous plants by Mr. R. Jeal, Regent's Park. Several seedling Gloxinias were shown by Mr. Stone, Regent's Park, and Mr. Ware sent a group of Sempervivums, prominent amongst which was a plant of S. arachnoideum. Messrs. Ivery & Son, Dorking, exhibited a pretty little silvery-leaved Ivy called Hedera Dorkingensis, and Messrs. E. G. Henderson & Son furnished a group of tree Carnations. Two brace of Cucumbers were sent by Messrs. Minier, Nash, & Nash, 60, Strand.

Certificates of Merit.—These were awarded to the following:—

Oncidium fuscatum (Veitch), a pretty little purplish-flowered Orchid.

Masdevallia Lindeni (Veitch), one of the most brilliant of cool house Orchids.

Dæmonorops fissus (Veitch), a graceful and very handsome Palm.

Phœnix rupicola (Veitch), another graceful Palm.

Phychosperma Keilii (Veitch), a strong-growing, handsome Geonoma-like Palm.

Platyloma brachypterum (Veitch), an extremely pretty little Fern.

Platyloma bellum (Veitch), somewhat like the former, but dwarfer.

Vresia reticulata (Bull), a strong, compact-growing Bromeliad.

Encephalartos regalis (Bull), a vigorous, stiff leaved, fine Cycad.

Encephalartos villosus ampliatus (Bull), a strong-growing sort, with very large, spreading fronds.

Dæmonorops palembanicus (Bull), a very graceful Palm.

Colax jugosus (Bull), a pretty Orchid, the sepals of which are creamy white, and the petals and lip striped and spotted with violet.

Dracæna Shepherdii (Bull), a strong-growing sort, with broad, bronzy, green leaves, edged with a pale, copper-coloured band.

Dracæna splendens (Bull), a compact-habited, dark, copper-coloured kind, the old leaves of which are banded with bright red, a colour which is strikingly conspicuous in the young leaves.

Cattleya Mendelii (Williams), one of the most magnificent of the genus.

Aralia Sieboldi aurea reticulata (E. G. Henderson), a yellow, variegated sort, at once pretty and effective.

Astilbe (Spiræa) japonica aurea reticulata (E. G. Henderson), an extremely pretty variety, beautifully variegated with yellow, and a welcome addition to our collections of hardy plants.

Canna tricolor (E. G. Henderson), a finely variegated form of Canna, the leaves of which are green and yellow, ribbed and veined with dark red or copper colour.

Variegated Otaheite Orange (Paul & Son), one of the best variegated forms of the Citron family we have yet seen, the creamy white variegation on the leaves being distinct and clear, and the plant free and vigorous in growth.

Azalea Apollo (Turner), flowers large, white, faintly streaked with red—an excellent variety.

Rose (H. P.), Madame Lacharme (Turner), a French Rose of great promise, flowers white with blush centre.

Polyanthus Crœsus (Ware), a large and showy yellow ground kind, with a deep orange eye.

Polyanthus Parisinæ (Ware), a large white ground coloured sort, with a primrose centre.

Pansy Pluto (Ware), one of the darkest of dark-coloured Pansies, fine in form and velvety in substance.

Primula acaulis, var. the Giant (Ware), a large double-flowered yellow Primrose.

COVENT GARDEN MARKET.

MAY 16TH.

CONTINENTAL and other foreign fruits and vegetables are now better and more abundant than they have been lately; English grown Strawberries and Grapes too are improving in flavour, colour, and ripeness. A few Melons have made their appearance, and Cucumbers are plentiful and good. Young Potatoes, English and foreign, are moderately abundant.

Prices of Fruits.—Apples, per half sieve, 3s. to 5s.; Apricots, 2s. to 3s. per doz.; Cobs, per lb., 2s. to 2s. 6d.; Cherries, per box, 3s. 6d. to 6s.; Gooseberries, per quart, 1s. to 1s. 6d.; Grapes, hothouse, per lb., 10s. to 18s.; Lemons, per 100, 6s. to 10s.; Oranges, per 100, 6s. to 12s.; Peaches, per doz., 18s. to 36s.; Pears, kitchen, per doz., 1s. to 3s.; dessert, per doz., 6s. to 18s.; Pine-Apples, per lb., 8s. to 12s.; Strawberries, per oz., 9d. to 1s. 6d.; Walnuts, per bushel, 15s. to 30s.; ditto, per 100, 2s. to 2s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 3s. to 6s.; French, 2s. to 8s.; Beans, Kidney, per 100, 1s. 6d. to 2s. 6d.; Beet, Red, per doz., 1s. to 3s.; Broccoli, per bundle, 9d. to 1s. 6d.; Cabbage, per doz., 1s. to 1s. 6d.; Carrots, per bunch, young, 1s. 6d., old do., 8d.; Cauliflower, per doz., 3s. to 6s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 2s. 6d. to 4s.; Cucumbers, each, 6d. to 2s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 2d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 5s. to 8s.; pickling, per quart, 6d.; Parsley, per doz. bunches, 6s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 3s. to 6s.; Potatoes, per bushel, 5s. to 10s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Savoys, per doz., 2s. to 3s.; Scorzonera, per bundle, 1s.; Seakale, per basket, 1s. to 2s.; Shallots, per lb., 8d.; Spinach, per bushel, 3s. 6d. to 5s.; Turnips, old, per bunch, 3d. to 6d., young do. 2s.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE GARDEN IN MAY.

THE system of flower-gardening so long followed by us has been notoriously destructive of the charms of the garden in spring, and equally so to those of the May or early summer garden. And even where "spring gardening" has been extensively adopted, and the parterre made gay with early-flowering bulbs and annuals and perennials, the beauty which a garden should exhibit in May is often seen but to a small extent. Thus the miles of Hyacinths and Tulips in the flower-garden along Park Lane being now out of flower, the whole of that vast strip of garden is a blank, so far as flowers are concerned. We need hardly urge that this should not be so. No garden, even if freely embellished with spring and summer bedding plants, should, or need be, poor in interest in May. To guard against that we have merely to plant freely a good variety of the numerous shrubs and low trees that flower at this season, and to cover the often bare surfaces of shrubberies and beds of shrubs with the numerous hardy flowers that bloom now. We must not depend on the merely formal set of beds, forming what is generally called the "flower garden," if a garden is to be thoroughly enjoyable at this or at any other season. To confine our main efforts to the embellishment of such is of necessity to deprive ourselves of that varied and changeful life which is the charm of a true garden. We have seen some private gardens this year in which a few simple beds and small groups of Hyacinths produced a better effect than the enormous areas of those bulbs planted in the parks. In the small gardens alluded to the very small space devoted to these bulbs would not be much of an eyesore till they were replaced by other flowers, whereas when a large and formal flower garden is thus embellished, a lapse of weeks occurs when the year is in its freshest dress. This all points to the fact that the ornaments of the garden should be more of a permanent and varied character. This they may be without encroaching on the space or beds necessary for a tasteful display of "bedding-out." And this kind of decoration is only seen at its best when so placed that it is relieved by an abundance of the verdure both of grass and shrub and tree. Where bedding plants and formal flower gardening are not important considerations, there need be no doubt that the most beautiful of early summer gardens could be made. What lovely results might we not attain, for example, if the pains now bestowed on grouping and growing bedding plants, which only beautify the garden for a season, were devoted to the best modes of cultivating, and the most artistic ways of grouping, the numerous families of hardy plants that flower in the open air at this season! It may appear to some that the plants and shrubs and trees we refer to require no "cultivation;" nor would they, if allowed a fair field to grow, but this is not their fate as a rule. Look in most shrubberies, and see the fine subjects which, from overcrowding, shade, &c., have dwindled so that their full beauty is never seen. Every day we see things stifled in shrubberies, which, with sufficient room for root and light for branch, would be each a picture. Surely a bush of one of the fine shrubs that flower in May is as well worthy of being grown into a perfect specimen as anything ever grown in the greenhouse or stove! Then as to kinds; how much we should gain by paying more attention to these. As the cultivation of hardy shrubs and trees involves almost no expense, compared with that necessary for plants grown in a more artificial state indoors, all the known ornamental species should be in every country garden where there is room for them. Half the gardens in the country betray a disgraceful poverty as regards the variety of hardy early-flowering trees and shrubs grown. And, even where the species are liberally planted, there is seldom due attention paid to the varieties. Look, for example, at the Lilac—sweet and fair as any flower we have, and only seen in a few forms in our gardens. Yet there are in France several dozen good varieties of this valuable shrub. A difference that specifically, or to a botanist, may appear of no account, is often of the highest importance in the garden; as, for example, the brightly-coloured form of the common Flowering Currant of the mountains of North-Western America—its brilliancy in the shrubbery makes it a far more valuable plant than the older form. And there is scarcely a species long introduced into our gardens of which gardeners have not detected and propagated varieties more or less valuable. Therefore, not only should those who wish their gardens to be worthily adorned at this season take care to have all the species known to be ornamental, but study also to secure their good varieties—often more valuable, as has just been shown, than the original forms themselves.

As to arrangement, that is a subject quite in its infancy. The gardener is not yet an artist; he must become so if the art is to advance. Pictures formed by the accidental grouping of a few wild plants we may often find in our woods and lanes and hedges; they rarely occur in our gardens except by accident. That it is perfectly easy and practicable to make such in our gardens without in the least interfering with the convenience of either gardener or owner, there need be no doubt. The materials our garden flora now affords for picture-making in spring and early summer are both numerous and varied, and the living pictures that may be made by combining and grouping them in a more artistic and natural manner than is at present the rule, are innumerable. To this phase of the subject we shall again return; and should we happily find any good examples which can be well shown by engravings we will illustrate them.

In conclusion, we cannot do better than name a few of the more important plants which are generally in full beauty at this season, viz., Alyssums, Snowy Mespilus, Andromedas, Anemones, Columbines, Arabises, Aubrietias, Berberries, Cherries, Wallflowers, Clematises, Solomon's Seal, Corydalis, Hawthorns, Japan Quince, Cytisus, Daphnes, Alpine Pinks, Dicentras, American Cowslips, Doronicums, Epimediums, Ericas, Fritillarias, Genistas, Geraniums, Gentians, Geums, Rockets, Candytufts, Irises, Kalmias, Linums, Honeysuckles, Lithospermums, Honesty, Lupins, Lychnises, Magnolias, Horse-chestnuts, Maluses, Muscaris, Forget-me-nots, Daffodils, Orobuses, Pæonies, Pansies, Poppies, Phloxes, Polemoniums, Primroses, Prunuses, Lungworts, Pyrethrums, Pyruses, Rhododendrons, Ranunculuses, Rock-roses, Saponarias, Saxifrages, Scillas, Spiræas, Lilacs, Globe-flowers, Tulips, Veronicas, Viburnums, Vincas, Violets, Weigelas, Anthericums, Deutzias, Erodiums, Jasmines, Sedums, Menziesias, Ornithogalums, Potentillas, Achilleas, Adonises, Campanulas, Collinsias, Cotoneasters, Galegas, Day-lilies, Pentstemons, Silenes, Tradescantias, Trilliums, Aponogetons, Arenarias, Azaleas, Calthas, Convallarias, Double Daisies, Erinuses, Exochorda grandiflora, Menyanthes trifoliata, Nemophilas, Omphalodes, Pernettyas, Ribes, Sun-roses. There are scores of other plants less common than these, which we could have added to the above list.

NOTES OF THE WEEK.

—— In many of the Rhododendron beds near the Serpentine in Hyde Park, there are now in flower, beneath the shrubs, numbers of Pheasant-eye Narcissus, Wallflowers, &c., gracefully embellishing ground usually left bare. It is a decided improvement. We hope the Narcissi, &c., will not suffer from the usual digging in autumn.

—— At last we have seen an alpine plant creditably staged at a flower-show. A little carpet of the beautiful Dianthus alpinus, dotted all over with flowers, was shown by M. Ware this week, at Kensington. If the many fine species of alpine flowers now in cultivation were exhibited in equally good condition at our flower-shows, these plants would soon become as popular in our gardens as they deserve to be.

—— The Potatoes, as well as other things, have suffered from the recent frost. In the Chiswick Gardens a singular result has been observed, namely, that Potato plants of the same species display a capricious tenderness under frost, some of the individuals, as of the Lapstone Kidney, &c., exhibiting perfect hardiness, while others succumbed speedily. This would point to the fact that every plant, like every man, possesses a special constitution.

—— At Chiswick House, notwithstanding the coldness of the season, the beds in the flower garden were furnished with their summer occupants some three weeks ago. Owing to the beds being narrow, they have been well protected with evergreen branches, so that injury from frost and cold winds has been avoided, and the plants are now starting freely into growth. Such early planting, however, cannot be universally recommended; but at Chiswick House circumstances require the gardens to be at their best in June and July, consequently early planting must be resorted to, and the uncertainty of the weather guarded against.

—— Our correspondent, Mr. J. Luscombe, of Coombe Royal, Devon, sent to South Kensington on Wednesday, last, two of the most beautiful and remarkable shrubs we have ever seen. These were two kinds of Embothrium, literally swarming with their bright coral-red flowers. They are said to attain 18 feet high in his garden in the open air. Being so distinct from anything else that grows in the open air with us, they are worth going a long journey to see them. Those who have gardens in mild districts would do well to try these Embothriums in their collections.

—— Her Majesty has conferred the honour of a Civil Companionship of the Bath on Professor Owen. As our readers are aware, Professor Owen, when he touches on botanical subjects, shows the same power of lucid reasoning and exposition with which the scientific world is so familiar when he deals with the subjects long ago made his own. He is also an enthusiastic gardener, and we know of few gardens more charming than that in which his pretty cottage stands on the edge of Richmond Park. This garden, of which we gave an illustration (see p. 147, Vol. II.) has been a favourite haunt of Dickens, Thackeray, and many other distinguished men.

—— A very destructive frost occurred in London and many other districts on last Monday night—10° of frost were registered at Chiswick. Apples and small fruits have been destroyed to a large extent. Every unopened bud of the Strawberry has been quite cut off. In the Rhododendron nurseries in Surrey, the young growth has been much injured. In the Midlands the damage has not been so great.

—— Bitterly cold nights, with the wind set fast in the east for some time past, have made vegetation quite three weeks later than usual. Nevertheless fruit crops in the Eastern Counties are promising, especially Apricots and Damsons, both of which have set abundantly. Apples are in full bloom, and have leaves sufficient to keep it from the cold. As for bedding-out, it must be late. Glass, mats, and boughs are as requisite as in March. Even Calceolarias wintered in cold frames, and with no covering but glass, have become yellow in leaf, by having the glass removed for Pelargoniums. On the evening of May 19th, we are informed by Mr. Henry Taylor that Yorkshire was visited by a frost of 20°, which severely damaged Potatos and fruit blossoms. Of late years we have seldom more than one month free from frosts, that month being July.

—— As we led our readers last week to anticipate (see p. 370) the special exhibition of stove and greenhouse plants for the Davis Memorial Prize at South Kensington, on Wednesday, though supported only by one exhibitor, Mr. Baines, of Southgate was highly satisfactory, and demonstrated very clearly that only a little more tact and enthusiasm are necessary to rid our flower shows of the sticky and half-leafless specimens which for some years past have disgraced them. Judged from any point of view, Mr. Baines' exhibition was eminently satisfactory, but as the result of less than three years' cultivation, they were simply magnificent. Fancy Ixora coccinea, a dense bush, more than 3 feet in height, and as much in width, with upwards of 100 heads of bloom on it, some of them 8 inches in diameter, and you will be ready to exclaim "prodigious!" Boronia pinnata, Hedaroma tulipifera, and Aphelexis macrantha rosea, all densely bloomed and superbly coloured, and you have plants which a Queen might be proud of. With these were a matchless Dipladenia amabilis, quite dense in colour, Epacris miniata splendens, wreathed in bloom, and a grand Clerodendron Balfourii in superb condition. We congratulate Mr. Baines upon his triumph, for though his supremacy was unchallenged, the victory is none the less on that account. These plants take one back to the early days of the "one shift" system of plant growing, and we hope the council will have the courage to do full justice to the revival.

—— The best Oranges now in Covent Garden Market come from Valencia, and very delicately flavoured they are.

—— That fine yellow Columbine (Aquilegia aurea) shown at Kensington the other day, is a distinct and handsome plant, with fine clear yellow flowers, making it worthy of association with the very finest species of Columbine.

—— A new genus of Bamboo-like plants is reported to have been discovered by M. Balansa in New Caledonia, and dried specimens of it have been deposited by him in the herbarium of the Muséum at Paris. An account of this and of other New Caledonian plants will shortly be published by MM. Brongniart, Bureau, and Balansa.

—— Spring Turnips are always welcome. France is now, and has been for many weeks past, supplying us with a thick and tapering kind almost like a small Beet in shape, but white as snow. This is the famous *Navet* of the French; it is much esteemed in cookery, boiling much more tenderly than our early Turnip.

—— Mr. Richards, who has for some years been assistant-secretary to the Royal Horticultural Society at South Kensington, is about to give up that situation; and, as a mark of respect for his services, the society has made him a life member. He has, we believe, accepted an appointment under the Royal Commissioners.

—— The *New York Tribune*, which has an able fruit-growing editor, lays down the following golden rules for those who plant Pears for profit:—1. Grow standards and not dwarfs. 2. Plant trees not more than two years old, and thrifty yearlings are still better. 3. Plant not less than fifty trees of any one kind. 4. Confine the list for market to six varieties or less.

—— Among the crowd of plants now making our flower markets gay, we notice Rhodanthe Manglesii, especially the white variety, the silvery flowers of which have a most charming effect, either for decoration, bouquets, or button-holes. The plants spring-raised are not well grown, but the pretty everlasting flowers are none the less acceptable on that account.

—— In the great avenue of Horse Chestnuts, at Hampton Court, we have seen no tree bearing such fine flowers as one growing on the margin of the lake at Chiswick House, the flower-spikes of which are from 12 to 16 inches in length, exclusive of the footstalks, and the blooms individually are well coloured. To a good soil and a never failing supply of moisture we are doubtless indebted for this result.

—— A Wigtonshire correspondent has sent us an extremely beautiful seedling Polyanthus. It has a conspicuous orange eye, surrounded by a well-defined belt of bright magenta, set in a field of deep velvety maroon. The general complaint is that Polyanthuses are too much alike; but here we have a welcome innovation, which may possibly be the forerunner of quite a new race of Polyanthuses.

—— Agave Jacquiniana, one of the large specimens of American Aloe at Kew, is now throwing up a strong flower-spike. It has been removed from the Succulent plant house to the great Palm stove, where it may now be seen. The plant is in vigorous health, and the flower-spike, which is already some 8 or 10 feet high, is making rapid progress. Some weeks must, however, yet elapse before the plant will be in flower.

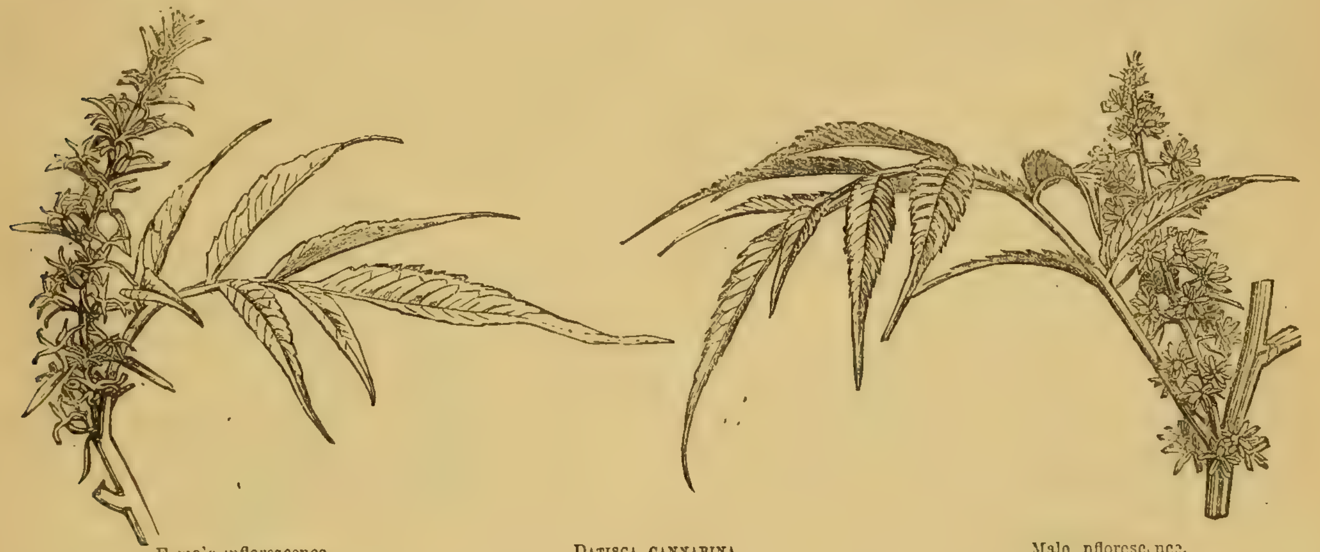
—— The opening of Alexandra Palace and Park this day will be an event of importance, adding, as it does, a new place of amusement and recreation to Londoners, especially to those in the great and rapidly growing northern suburbs. The palace, situated in a beautiful park of over 220 acres, occupies the summit of a range of hills which have been aptly named "the northern heights of London;" and, extending as they do from Hampstead to Muswell Hill—a sweep of over four miles in length—they constitute a natural limitation to the already overgrown city. The view from the terraces, both on the north and south sides of the building, is very extensive. On a clear day, the Crystal Palace at Sydenham and the Surrey hills can readily be seen. The distance apart of the two palaces is exactly twelve miles, and it is a curious fact that the six miles' radius round Charing Cross intersects both buildings. The flower show, as far as we can learn, will be well supported. The new railway in connexion with the whole of the Metropolitan system, and running direct from King's Cross to the central transept of the Palace, was virtually opened to the public this week.

THE FLOWER GARDEN.

DATISCA CANNABINA.

By the casual observer, the subject of the accompanying illustrations might readily be taken for a rigid perennial form of the ordinary Garden Hemp. Hence its very appropriate specific title, and hence also does this very fact recommend it for more general cultivation, seeing that we have few plants that present a more graceful contour than the giant form of our common Garden Hemp. The Datisca is diœcious, or rather is said to be so; but seeing that, from the female plant, I have raised some seedlings before I was the happy possessor of its consort, I have a suspicion that occasionally, in the female flowers, stamens are developed; in fact, I have found some myself—many abortive, but some few perfect. So that Fresenius, who recorded the occurrence of fully-developed seeds, independent of the male plant, was right; but in basing a theory of embryology without fertilisation thereon, he was evidently wrong. The species of which the representations are here given is the only one I have yet seen in cultivation. It is a native of the south-east of Europe, and is perfectly hardy; besides which important item it possesses such a vigorous constitution and such a powerful root-hold, the hempen character being as characteristic of its rope-like roots as are the leaves of the plant itself, that it is qualified to hold its own with all comers, and, if placed in a border, to bid defiance to the most energetic of skilful spade-drivers. I have said—if placed in a border, but this is not its proper location; it is, above all others, a plant adapted for the grassy margin of an irregular shrubbery, and will be rendered all the more effective if planted on the face of a grassy slope, where its deep-seeking roots will soon defy even the most protracted drought; nor is any margin of open soil between it and the adjacent turf requisite. It grows to a height of 5 feet in our clay soil, and used to attain even a greater size in the light sandy soil at Kew. The male plant is decidedly the most vigorous and graceful of the two—the terminal panicles of flowers being less dense, otherwise, in foliage, there is little difference. They both have one important qualification, that they require no artificial supports; in fact, their numerous stems (a well-established old plant will make a score or two) should be always allowed to display their beauty without let or hindrance.

Hull Botanic Gardens. JAS. C. NIVEN.



Female inflorescence. DATISCA CANNABINA. Male inflorescence.

WHAT IS A PRIMROSE?

This question is mooted I see by your correspondent Mr. Dean (see p. 360), and without entering into any controversy there may be about the plants exhibited at a late Metropolitan show, I confess that I am unable to say, in many instances, which are Primroses and which are not; for in a batch of seedlings I have, obtained mostly from Polyanthuses which had been crossed by both the ordinary wild Cowslip and the cultivated Primrose, I find plants that defy classification under any one of the three classes just given; in fact, the Primrose runs into the Polyanthus, and the latter into the Cowslip, rendering determination impossible. I expect Mr. Dean and many others (myself included) would confine the Primrose to kinds which produce one flower only on each stem, the calyx being tubular instead of inflated, as in the Polyanthus, while the Cowslip in an ordinary way differs from both in the umbel of flowers being pendent, *i.e.*, hanging mouth downwards, and in the calyx being much enlarged. Then, again, the Oxlip differs but little in form from the Polyanthus, except in being mostly of the normal colour; but cultivation or hybridisation has removed many of these distinctions, and one of the most useful Primroses I have (a single crimson one) produces quite as often umbels as single flowers, both being met with on the same plant; and this is by no means a solitary freak or confined to one year, but has been the same for several years and on several dozens of plants. Now, I ask, is this a Primrose or is it not? I need hardly say that I also find amongst the seedlings alluded to some having the same peculiarity, while the ordinary Cowslip here has become red in colour, and instead of being drooping is partially erect, some of the flowers merging, by various degrees, into those of the Polyanthus. Now it is not so easy to determine from the above what is a Polyanthus, any more than what is a Primrose; and what is still more difficult, what is the Oxlip. For the sake of distinction I have been calling a "hose-in-hose" variety of the ordinary wild Primrose colour by this name, not that it is botanically right, but by way of distinguishing one of the most ornamental members of the family from the others, and one which I cultivate (or rather intend to do so) largely, on account of its remarkably free-flowering qualities; as a late one it has all the beauty of the double yellow with a tenfold means of multiplying itself. But the most useful Primrose which I grow is the single white, the earliest and most prolific bloomer of the whole lot. We had several hundreds of plants of it in flower long before Christmas, and long before the wild one made its appearance, although both had the same advantages. This, I expect, would be pronounced a Primrose, properly so-called. The only one that I have had for any number of years that presents both the single-stemmed and umbel form is the common one alluded to; and as the Primrose or rather Primula family is evidently in the ascendant, perhaps some one will be good enough to set us right in their nomenclature. On visiting a friend some few days ago who is very found of these flowers, I found he was trying to fertilise some of them with the pollen of P. cortusoides amœna; and his alpine Auricula had also undergone a similar ordeal. The kinds which we grow here out-of-doors include P. denticulata, which stands the winter tolerably well, but suffers from slugs; P. cortusoides amœna, and P. japonica. I need say no more in reference to this matter, on which most of my fellow cultivators know little more than myself; but, I repeat, if some one sufficiently acquainted with the subject will be kind enough to define the kinds, in so far as relates to the first three mentioned, I shall be glad, for I confess my inability to do so. J. ROBSON.

PENTSTEMONS.

A considerable period having elapsed since a former trial of these useful border flowers took place, and a large number of novelties having been raised in the interim, it was determined that another trial should be made this season (1872). The varieties grown were contributed by Messrs. Downie, Laird, and Laing; they bloomed satisfactorily; and several awards equivalent to first-class certificates (indicated by the mark §) were made by the Floral Committee. For the selection given at the end of this Report, I am indebted to Mr. Spinks, foreman at Chiswick, who has had the plants under observation during the whole of the blooming season. The varieties are classified according to the colour of their flowers.

FLOWERS NEARLY WHITE.

§Bridesmaid.—Nearly pure white, free and good habit.

Lady Coutts Lindsay.—Creamy white, robust but tall; fine flower.

Delicatum.—Nearly white, shaded with rose; throat white; rather small flower, free.

Augier.—Nearly white, shaded with pale rose; throat large, creamy white; of a pleasing shade; free.

George Bruant.—White, shaded with very pale purplish rose; throat large, open, pure white; free.

Snowdrop.—White, free-flowering, and good.

FLOWERS ROSE-COLOURED.

Queen Victoria.—Tube rose and white, clear rose segments; throat white; showy, free.

Leah.—Rose, large.

Monarch.—Rose; throat white, with heavy crimson pencillings.

Flower of the Day.—Very pale rose, washy; white throat; not desirable.

§John Pow.—Rose-colour; throat white, with dark red stripes on the lower part; free, compact, and good.

Mrs. A. Sterry.—Pale rose, with white throat; free-flowering and pretty, but small.

Lady Boswell.—Very large pale rose; throat large, open, white; free-flowering and distinct.

Pauline Dumont.—Rose-colour, with pure white throat; free.

Bessie Anderson.—Clear pale rose, the throat very pure white; of good shape; tall and straggling, otherwise good.

FLOWERS BRIGHT PINK OR CARMINE.

§James Rothschild.—Rosy crimson, striped and shaded with purplish crimson; good habit and free.

Dr. Hogg.—Bright rose; white throat striped with crimson, upper segments shaded with lake; fine, free, and good habit.

Christine Nillson.—Bright reddish carmine; white throat; dwarf, but rather weak in habit.

Colin Bell.—Bright rose; throat shaded purple, with dark maroon stripes; very free, and good habit; distinct.

Grandis.—Large, rose; throat white in the upper part, thickly striped and shaded crimson-purple below; fine.

Alfred Pillen.—Very bright carmine, the throat shaded with dark maroon, and striped on the lower half.

Apollon.—Very bright carmine; the throat pure white, with a few purplish-crimson stripes; late, and fine habit.

§A. Sainte-Claire.—Dull rose; throat large, white, very heavily shaded and striped with crimson; of good form, very free, and good.

§Polly King.—Bright rosy carmine; throat white, striped with dark carmine; free and good habit.

FLOWERS RED.

John Morris.—Red tube and limb, the three lower segments large, upper ones small; throat white, heavily shaded, and with a few stripes of dark maroon; slender growth.

Elegans.—Red, with small tube and narrow segments; dull white throat with crimson stripes; not desirable.

Mrs. R. Clark.—Dull red; the throat white, with a few dark stripes; small, with narrow segments, but free.

Floribunda.—Bright carmine red, of fine form; throat white, thickly striped with crimson, shaded with lake; dwarf and good.

§M. Moxton.—Bright scarlet, very free, and of good habit; a fine variety.

Henry King.—Brilliant carmine-scarlet; throat very large, white, striped and shaded with crimson; fine variety, free.

Miss Baillie.—Flower long, brilliant scarlet, the throat creamy white, with a few crimson stripes; fine shape, free and good.

§Surpasse Victor Hugo.—Bright red, large, and finely formed; throat nearly pure white; good habit; very free.

Royal Scarlet.—Good bright red, with striped throat; free and good.

§Bons Villageois.—Very large, with broad smooth segments; bright red, the throat striped with a darker colour; exceedingly free; one of the best.

§Stanstead Rival.—Large, crimson-scarlet; throat white, with a few crimson stripes, the edge of the upper segments shaded with mauve; very robust, free-flowering, and late; a grand variety.

§M. Lemoinier.—Tube dark purplish red, segments red; throat pure white, very heavily striped with dark maroon on the lower part, slightly striped above, shaded on the margin of the throat with bright lake; very fine form, and distinct; good habit, and free. The finest for individual beauty of all Pentstemons.

FLOWERS ROSY PURPLE.

Le Conquérant.—Pale rosy purple; throat large, white, with few stripes; very free.

§Sunrise.—Purplish rose; throat white, with dark stripes on lower segments, shaded with purple; distinct and good.

Rosy Gem.—Pale purplish rose, throat pure white; rather washy.

Agnes Laing.—Very clear pale rosy purple, of good form; throat pure white; good, distinct, and free.

§Mrs. Cator.—Pale rosy purple; throat large and white; very free, good foliage, and robust.

Mrs. Moon.—Pale purplish rose, very clear throat; fine form, robust, tall, and distinct.

§James Adams.—Clear rosy magenta, of fine form; throat pure white, with few stripes; excellent, distinct, and free.

§Le Khédive.—Dark purplish rose, heavily shaded and striped with maroon; free, distinct, and good.

FLOWERS PALE PURPLE.

Mrs. McHardy.—Pale lavender; white throat, with few stripes, rather washy.

§John McPherson.—Bright mauve; throat nearly white, with a few purple stripes; very pretty, free-flowering, but of weak habit.

James Forrest.—Pale shaded mauve, laced and striped with a darker colour; ill-shaped and small.

Richard Lenoir.—Like Mrs. McHardy in general appearance and colour, but with a purer white throat; free.

Lovely.—Lilac, with pure white throat; rather small, free.

§Georges Sand.—Bright lilac tube and segments; throat white, with few stripes; very free, showy, late.

Candidate.—Pale washy purple; a small ill-shaped flower, not desirable.

Gustave Lambert.—Clear pale purple, large, and of good form; throat large, white, peculiarly shaded on lower segments; distinct and good; an improvement on Georges Sand.

Bourbaki.—Pale clear purple; white throat, with few stripes; very robust, free.

§W. M. Alexander.—Fine purple; throat white, with a few stripes; very large and well formed, free, robust, and good.

Marie Held.—Clear pale purple-shaded on white; throat shaded, large, striped with the same colour; free, and compact.

Madame Louis Schmitzer.—Pale magenta; throat white, a badly shaped flower; not good.

Champion.—Large pale magenta; throat large, pure white, with dark purple stripes; very free good habit, and pleasing.

Petruchio.—Pale mauve; throat shaded and striped with dark purple maroon; small flowers, but free.

FLOWERS DARK PURPLE.

Magenta.—Fine clear purple; throat of the purest white; fine form, robust, excellent in habit; the best of the colour.

Regalia.—Purple, the throat white, with few stripes; rather a weak grower.

M. E. Wynne.—Clear purple, throat white, with few purple stripes; very badly shaped.

Stanstead Surprise.—Dark purple tube and segments; throat pure white; free and good.

Victor.—Dark purple; throat white, shaded on the upper part with purple, on the lower part marked with a few darker stripes; free and good.

W. E. Gumbleton.—Clear true purple, throat white; a bold flower, free and good.

Czar.—Very clear bright purple, throat white, with dark purple stripes; compact habit, and free-flowering.

Mulberry Superb.—Dull dark purple, with brighter segments; throat white, slightly striped on the lower part; free.

Robert Fenn.—Dull maroon-purple, small; throat heavily striped with dark maroon; good.

Attraction.—Very dark purple, throat white, with broad dark maroon stripes; free-flowering.

Black Knight.—Dark purple, with white throat.

FLOWERS DARK MAROON-PURPLE.

§De Saint Paul.—A large cupped flower, dark maroon-purple;

throat white, with dark stripes on lower part; a fine, showy, free, robust, late variety.

§Col. Long.—The counterpart of the last variety in general colour, but with whiter throat, better-shaped flowers, and not so late; fine and good.

Emile Chaté.—Purplish crimson; throat white shaded and striped dark crimson; flowers of good shape; habit compact.

Arthur Sterry.—Small rosy purple; throat white, with few stripes; not very good.

George Arner.—Very dark dull purple; throat heavily striped and shaded with dull maroon on lower half, white on the upper half; habit robust, very free, and late; a fine variety.

Black Prince.—Intensely dark purple, with very large and broad segments of the same colour; throat shaded and striped heavily with a darker colour; a very bold and desirable variety, of the darkest type; good.

A SELECTION OF TWENTY OF THE BEST PENTSTEMONS.

A. Sainte-Claire, Bessie Anderson, Black Prince, Bons Villageois, Bridesmaid, Colin Bell, Col. Long, De Saint Paul, George Arner, Georges Sand, James Adams, Lady Boswell, Lady Coutts Lindsay, Le Khédive, Magenta, M. Lemoinier, Queen Victoria, Stanstead Rival, Victor, W. M. Alexander.—*T. Moore, in "Proceedings of the Royal Horticultural Society."*

IRIS IBERICA.

This handsome plant is far easier to cultivate than most persons imagine. It is perfectly hardy, and not at all fastidious as to its requirements. I have seen it planted in frames and in the open air, in light soil and in heavy, and in all cases it has grown freely and flowered. From my experience of this plant, I find it thrives best in a rich fibrous loam, in which it can send its long roots deep into the soil. The rhizome does not require to be planted deeply—just below the surface seems to be sufficient. In most cases I have found the roots perish when planted deeply. The rhizome, during the winter, is very impatient of moisture, and should be kept comparatively dry. To attain this end, I use coarse river sand, planting the rhizome completely in it, in the same way as many Cape and other bulbs are planted. By this means the rhizome is kept rather dry during the winter; and it is also a great assistance to the plant in summer, as the young shoots can easily force their way through. Under this treatment the plant grows more freely, and can be easily multiplied by division of the rhizome. It is admirably adapted for rockwork, or for the select border, and, when better known, will find a place in every garden. P.

Flower of Iris iberica.

Bedding Petunias.—The best way of managing Petunias in beds is as follows:—After the plants have made some growth in the beds, procure a lot of pliable Hazel rods, about 2 feet long and as thick as one's little finger; bend both ends firmly into the ground at suitable intervals all over the bed, so as to make a kind of trellis about 8 inches from the soil, which will look like a lot of small croquet hoops all over the surface of the bed. The sticks of course need not be put in till the plants have made some growth and are showing symptoms of requiring some attention, and then train the shoots over the hoops, tying them down so as to form a neat, compact bed. This tying and bending down of the shoots will have a tendency to check rampant growth and induce a greater freedom of flowering. Without something of this kind, Petunias by September, when the garden ought still to be in full dress, will be getting straggling, and liable to be blown about by the wind; and this plan really does not involve much trouble. In fact, a bed of Petunias may be kept in good condition with as little or even less labour than Verbenas or Geraniums; for, what with pegging the one, and incessantly picking the other, they require almost constant attention. A man, with a stout plank sufficiently strong to bear his weight, with a couple of large flower-pots to support each end, will soon travel over a bed of Petunias and do the necessary training without putting a foot on the bed. It is, however, necessary to bear in mind that the trellis must be formed in time. Do not wait till the necessity for it is forced upon you by seeing, some windy morning, the shoots straggling on the Grass or over the Box edging, as the difficulty in putting matters right will then be tenfold.—E. H.

Iron Flower Vases.—Allow me to corroborate the remarks of Mr. Buchanan as to the adaptability of cast iron for plant vases. I much prefer them to either stone or composition vases for growing plants in the open air. I have had no experience with iron indoors, but I should, nevertheless, not hesitate to use pots made of it. For eleven years I annually filled seventeen vases, which were made of iron and 2 feet in diameter, with plants generally used for that purpose, and I found the plants to do perfectly—better than many others in the same grounds which were planted in white marble and rough sandstone vases. The success of those made of iron I always attributed to their holding more soil in the same space, and not to any advantage which iron has over stone. The vases were painted stone colour, and if dusted with sand when the paint is wet, no one, except upon close examination, could tell that they were made of iron. Such vases as those referred to were cast at the Colebrookdale Iron-works. Vases of this description need not be more than a quarter of an inch thick, and are not nearly so heavy as vases made of stone of the same size, and are not so liable to be broken when overturned. Composition vases of whatever sort are always cracking and falling to pieces with the weather, and lack solidity both in appearance and in reality.—W. Dick.

Edging for Suburban Gardens.—Adjoining a certain class of dwelling houses in and about large towns are plots of ground, often only a few feet square, in which flowers are grown; and in order to prevent persons from plucking the flowers, a gravel walk divides these little plots from the low palisade-bearing wall. Turf, tile, slate, and stone, have been used as edging for such gardens, with varying success, but by the following method a very pretty edging for such a position may easily be made. Place a layer of small flin stones on a level, a trifle lower than that of the gravel walk, draw a little soil between and upon them, lay pieces of Stonecrop alternately with London Pride, so that their tops may be nearly flush with the stones next the walk, then apply a little more soil, and put on another layer of stones, pressed a little off the perpendicular towards the bed, and plant as before. The Stonecrop partially hiding the flints forms a neat groundwork, while the London Pride, throwing its foliage and flowers above the whole forms a contrast at once pleasing and natural. —T. W.

Aubrietias.—I feel as if I could not let the spring, with all its beautiful flowers, pass away without a word or two in praise of Aubrietias, which last long in flower, delight in open, dry, exposed situations, and produce charming masses of warm-coloured blossoms. There are many varieties of Aubrietias in gardens, but probably all of them may be reduced to some half-dozen species; all of them are, however, beautiful, some of them eminently so. The oldest variety is the one called by some people Aubrietia purpurea, a pretty flower enough, but thrown into the shade by some of the other kinds. There is a well-known variegated variety of this, not of much value, except as a neat little rock plant. Then there is what is called deltoidea, which is very near, if not identical with purpurea. We have also grandiflora, a kind similar in colour to purpurea, but twice or thrice its size. This has a lax diffuse habit, which makes it a charming rock plant. There is a variety of this called græca, a fine plant, opening out at first a full purple, and dying off a lavender colour. Masses of this, with its various shades of colour, are very pleasing. There is also a fine variegated, large-flowered form of it. Then we have A. spathulata, erubescens, and hesperidifolia. The last of the Aubrietias I shall notice are Mooreana, Columnæ, and Campbelli. Mooreana is a compact little cushion-like plant, which, in its flowering season, is literally smothered with bloom. This has a shade of blue in it. Campbelli and Columnæ appear to me identical; but, like

Mooreana, they are among the loveliest of Aubrietias. The last three are well adapted for spring gardening purposes, being charming either in masses or as edging to beds of other plants. They are perfectly hardy, and will flower from March until June.—J. WILLIAMS.

THE BEST HARDY SPRING FLOWERS.

- Adonis
  - vernalis
- Allium
  - neapolitanum
  - paradoxum
- Alyssum
  - alpestre
  - montanum
  - saxatile
- Anchusa
  - sempervirens
- Androsace in var.
- Anemone
  - alpina
  - apennina
  - coronaria
  - fulgens
  - nemorosa
  - palmata
  - patens
  - Pulsatilla
  - ranunculoides
  - stellata
  - sulphurea
  - sylvestris
  - trifoliata
  - vernalis
- Antennaria
  - dioica
- Arabis
  - albida
  - arenosa
  - blepharophylla
  - petræa
  - procurrens
  - purpurea
- Arenaria
  - verna
- Armeria
  - vulgaris
- Asperula
  - odorata
- Aubrietias, all the kinds
- Bellis in var.
- Borago
  - orientalis
- Bryanthus
  - erectus
- Bulbocodium
  - vernum
- Caltha palustris plena
- Centaurea
  - Cyanus
  - montana
- Cardamine
  - trifolia
- Cerastium in var.
- Cheiranthus
  - Cheiri
  - Dilleni
  - Marshallii
- Chelidonium
  - grandiflorum
  - japonicum
- Claytonia
  - virginica
- Collinsias in var.
- Collomia
  - coccinea
- Convallaria
  - majalis
- Corydalis
  - bracteata
  - lutea
  - Marschalliana
  - nobilis
  - tuberosa
- Crocus
  - biflorus
  - Imperatonius
  - luteus and vars.
  - reticulatus
  - Sieberi
  - vernus and vars.
  - versicolor
- Cyclamen in var.
- Delphinium
  - nudicaule
- Dentaria
  - digitata
- Dicentra
  - eximia
  - spectabilis
- Doronicum
  - caucasicum
  - Clusei
  - Columnæ
- Dodecatheon, all the kinds
- Draba in var.
- Epimediums
- Erodium hymenodes
- Eranthis
  - hyemalis
- Erica
  - herbacea
  - carnea
  - mediterranea
- Erysimum
  - ochroleucum
- Erythronium
  - Deus-canis
- Eschscholtias, all the kinds
- Ficaria
  - grandiflora
- Fritillaria, all the kinds
- Galanthus
  - nivalis
  - plicatus
- Gentiana
  - acaulis
- Gentiana
  - verna
- Helleborus, all the kinds
- Hepatica
  - angulosa
  - triloba
- Hutchinsia
  - alpina
- Hyacinthus
  - amethystinus
  - orientalis
- Iberis, all perennial kinds
- Iris
  - germanica
  - nudicaulis
  - pumila
  - reticulata
  - stylosa
- Jeffersonia
  - diphylla
- Leucojum
  - æstivum
  - vernum
- Limnanthes
  - Douglasii
- Lithospermum
  - prostratum
- Lunaria
  - biennis
- Malcolmia
  - maritima
- Meconopsis
  - cambrica
- Muscari, all the kinds
- Myosotis
  - alpestris
  - dissitiflora
  - palustris
  - sylvatica
- Narcissus, all the kinds
- Nemophila, all the kinds
- Omphalodes
  - Luciliæ
  - verna
- Orobus
  - cyaneus
  - flaccidus
  - vernus
- Petrocallis
  - pyrenaica
- Phlox
  - divaricata
  - procumbens
  - reptans
  - setacea
  - subulata
- Primula, many species
- Pulmonaria, all the kinds
- Puschkinia
  - scilloides
- Ramondia
  - pyrenaica
- Ranunculus
  - aconitifolius
  - acris
  - alpestris
  - amplexicaulis
  - chærophyllus
  - Gouani
  - gramineus
  - monspeliacus
  - montanus
  - spicatus
- Sanguinaria
  - canadensis
- Saponaria
  - calabrica
- Saxifraga, most of the kinds
- Scilla
  - amœna
  - bifolia
  - rosea
  - sibirica
- Silene
  - pendula
- Sisyrinchium
  - grandiflorum
- Soldanella, all the kinds
- Stocks in var.
- Stylophorum
  - diphyllum
- Stocks in variety
- Thalictrum
  - anemonoides
- Thlaspi
  - latifolium
- Trientalis
  - europæa
- Triteleia
  - uniflora
- Tulipa, all the kinds
- Uvularia
  - grandiflora
- Veronica
  - pectinata
- Vesicaria
  - utriculata
- Vinca in var.
- Viola
  - odorata
  - suavis
  - tricolor in var.
- Waldsteinia
  - geoides
  - trifolia

T. S.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Gentiana aucalis.—This is at present the gem of the mixed border. Its lovely flowers of azure brightness almost hide the thick carpet of leaves below them.—D. T. FISH.

Fritillaria delphinensis (Grenier), F. lutea (Bieb).—The plant figured by Mr. Moggridge under this name is one of the most ornamental of the genus, and is found in alpine pastures about Tenda and Limone in the Maritime Alps. Last June I had the pleasure of seeing a meadow high up in the mountains above Limone, adorned with hundreds of its beautiful orange-buff flowers, and some roots I brought home have flowered in my garden in the middle of April. —G. MAW, *Benthall Hall.*

Narcissus triandrus.—This is one of the loveliest of all Narcissi, producing charming bright canary-coloured flowers, the petals of which are reflexed, and the cup bell-shaped; the foliage is dark green, and grassy like. An ordinary garden soil will suit it, and it will succeed in the herbaceous border or on rockwork. It is considered to be a late flowering kind, but in Mr. Parker's nursery, at Tooting, it commenced flowering fully as early as any of the other members of the genus, and it has quite outlived them, for even now, it is the only flowering Narcissus we have, with the exception of N. Bulbocodium.—J. D.

Omphalodes Luciliæ.—Of the many hardy gems that grace our flower and alpine gardens, few surpass in loveliness this exquisite little flower. Its leaves are glaucous and smooth, those nearest the root furnished with a footstalk, and those near the end of the shoots sessile. Its flowers are of a bluish lilac or mauve-colour, marked with white, and about half-an-inch in diameter. It succeeds admirably in a sandy loam, enriched with leaf-mould in a partially shaded warm situation. In such a position a long succession of flowers from the first of May onwards may be looked for. In early spring or in autumn the plants may be increased by division, and seeds sown any time after they are ripe, or in spring.—CHAS. WILKINSON.

GARDEN DESTROYERS.

VINE PESTS.

THERE is an old saying that "a taste of practice is worth a whole windbag of theory," and I can assure Mr. Pearson that the remedies I have recommended I have used with some of the finest collections of plants in England since 1832, without any of the ghosts he speaks of having arisen. Mr. Pearson says I recommended syringing with "a mixture of lime and sulphur." Where and when did I recommend this novel system of whitewashing? Until Mr. Pearson informed me of it it never struck me, and I should now certainly be sorry to deprive him of an idea so perfectly original. What I have used, and what I desired to teach others to use, was the vapour of sulphur and, in case of need, its resultant product—soluble or liquid sulphur. Either or both of these I have long found a perfect remedy for red spider and mildew in plant-houses of all kinds, and that without the slightest injury to either crop or foliage. Surely, it is unnecessary to explain that the vapour of sulphur and soluble sulphur are products very different from sulphur fumes. The latter are known to be destructive to both vegetable and animal life, but, by the process which I have recommended, the atmosphere of a house may be so thoroughly impregnated with the vapour of sulphur as to render it impossible for human beings to breathe it for any length of time and yet be quite innocuous to plants. But let it be understood that it must be vapour, not sulphur in an ignited state. And further, I may explain that under my rough-and-ready method of production the liquid sulphur will not be very potent. To make it of full strength two parts of quick-lime to one of sulphur should be boiled together in a close vessel, and then be decanted and closely stopped; but, in my case, I merely want the vapour, and, therefore, the clear liquid is not very strong. Mr. Pearson pins his faith to what is called "Gishurst compound." What is that but soluble sulphur and soft soap? At least for more than forty years I have known that those two substances, properly combined, are as safe a remedy for red spider and mildew as need be used. With Mr. Pearson's objection to crude sulphur I have nothing to do; sufficient for me is it that it has answered my purpose, and, if others abuse its use, that is their affair. And now for live fire: I grant that, in an hermetically-sealed house, it is a dangerous agent, but for the benefit of those whom it may concern, I may state that in the winter of 1850 I had, through the bursting of a boiler, every night for a fortnight, with 10° to 20° of frost all the time, one of the finest collections of stove and greenhouse plants in England, with nothing to protect them but external coverings, and the heat evolved by scores of pounds of candles and a number of braziers of charcoal and coke inside the houses. A chink of air at the highest part of the house, call it a chimney if you like, allowed the products of combustion to escape, and no harm was done. With such examples as these in my experience, I have no sympathy with those who make mountains of mole-hills; but, on the contrary, have a strong conviction that extreme caution is quite as likely to result in failure as a little wholesome daring. P.

The Bullfinch.—This is one of the most beautiful of our British birds, but unfortunately his mischievous proclivities render further eulogy regarding him impossible. Some of his friends (he has not many) attempt to form an excuse for his tree-disbudding propensities on the plea that he is searching for insects; but this cannot be substantiated. Be that as it may, he has certainly a weakness for the best and plumpest flower-buds of the Apricot and the Plum, which he prefers even to the buds of the Gooseberry and Currant. Even in a short space of time a pair or two of bullfinches, in winter or in early spring, will ruin a wall of fruit trees, or a quarter of Gooseberry and Currant bushes. Fortunately, however, compared with other finches, bullfinches are by no means numerous, although they appear to have been much more so than usual this spring, a circumstance possibly owing to the comparative mildness of the foregoing winter; for, notwithstanding the robust and burly aspect of bullfinches, they are, nevertheless, constitutionally delicate, and a severe winter proves fatal to great numbers of them. Bullfinches, moreover, are not greatly gifted with the power of keeping themselves free from danger. Their peculiarly plaintive and frequently uttered cry gives intimation of their whereabouts to birds of prey, as well as to wingless enemies, who are by no means slow to take advantage of the circumstance. Altogether, therefore, Mr. Bullfinch has a somewhat rough time of it; and he might justly sing that "Few and evil are his days," so short-lasted are they. In confinement the term of his life seldom exceeds three or four years, and possibly this is not much exceeded when he is in the enjoyment of liberty. In a domesticated condition he soon becomes a docile, confiding, and affectionate pet; and when in the full enjoyment of liberty, a glimpse of his gay and varied plumage flitting amid sunlit foliage, recalls distant scenes of early joyous boyhood, of Saturday half-holidays, sunny glades, and shady woods.—P. G., *Culford.*

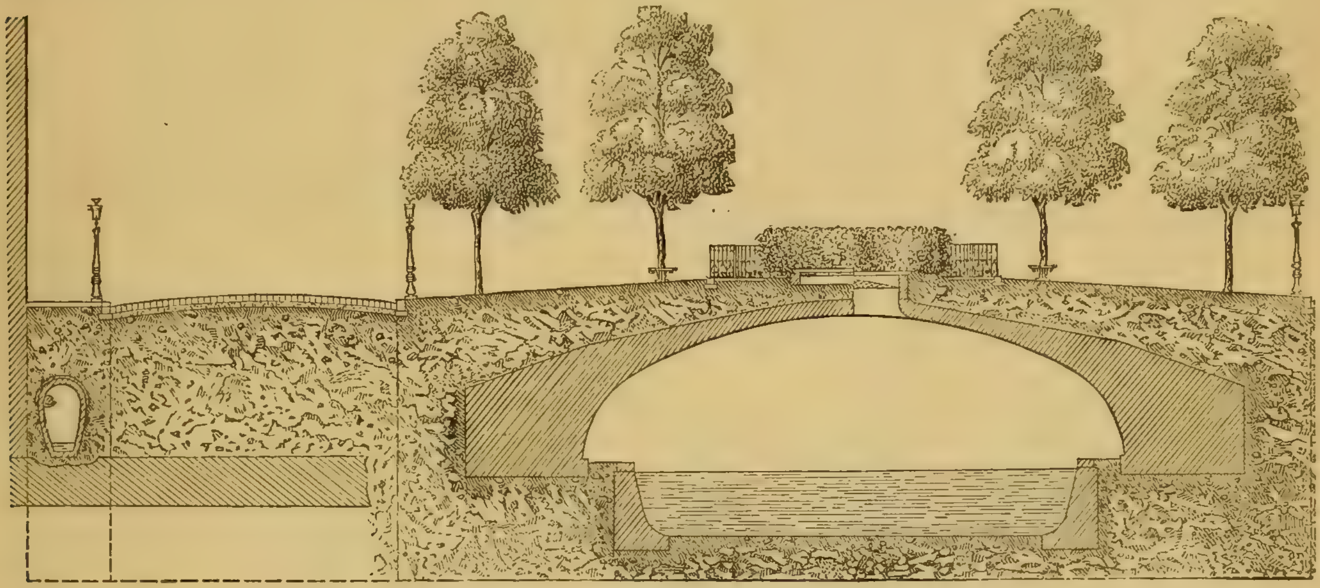
Cure for Red Spider and Thrips.—It was stated, I think, in your columns, some time ago, that there was no cure for red spider when once it had thoroughly established itself. I thought so myself at one time, but I imagine that I have discovered an antidote, not only for red spider, but also for thrips and greenfly. This season red spider made its appearance in rather an aggravated form on a particular Peach tree here, almost as soon as the first leaves were well out. I had tried my liquid remedy on Cucumbers with success, and so I applied it to the Peach tree in question by putting a little in the water with which it was syringed every evening. The result is, that after a fortnight's application the spider has been completely subdued. In confirmation of what I say, I send you a shoot for inspection. You will observe that the first leaf on the shoot is covered with dead spiders, and that traces of them are on others, from which they have been dislodged, and that the leaves formed since are perfectly clean and healthy, showing that the liquid is harmless to the plant, while it is destructive to insect life. In fact, so far, I have proved that it may be applied repeatedly in a concentrated form to the most tender foliage without bad effects; but a weak solution, applied in the way I have stated, seems more than enough for the insects. It costs me about 3s. per gallon to make it, but that quantity diluted is sufficient for 200 gallons or more of water.—J. Simpson, *Wortley Hall Gardens.* [The leaves sent were quite free from living insects.]

Crickets.—I am much troubled with these pests in a small stove, heated by means of hot-water pipes. Can you or any of your correspondents furnish me with a remedy for destroying them? Last year I got rid of them by putting treacle in basins, into which they got and could not escape. We could then catch and kill them. At the present time we have literally swarms of them. Their chief food is Lobelia speciosa and Dahlias.—J. B. [The remedy by which you got rid of the crickets last year is one of the best that can be adopted, and might be repeated now with the same success. Slices of bread and butter covered with Battey's Vermin-killer Paste or Phosphor Paste might also be tried.]

Bullfinches.—The destruction committed by these little depredators in this neighbourhood is something alarming; in fact, our fruit trees are nearly ruined, the buds all up the branches being gone, so that not only is this year's fruit crop destroyed, but next year's as well. Vigorous action therefore must be taken if our fruit crop is to be saved. I would suggest that every proprietor of a garden should give one shilling a dozen for all bullfinches' eggs taken, as a means of getting rid of such destructive birds to fruit bushes. Taking the eggs would be the most humane way of destroying them, and would not injure the trees so much as shooting. The trees destroyed here are Gooseberries, Plums, and Apricots on walls.—C. Richardson, *Godstone, Surrey.* [Mr. Gilbert, of Burleigh, is obliged to Mr. Harrison Weir (see p. 345) for his correction in respect to bullfinches; nevertheless, as they have spoiled his crop of Gooseberries, he states that he can make no rash promises in reference to them on the score of humanity. On the contrary, he adds that he shall kill all that come in his way.]

ENTER A GARDEN, EXIT A NUISANCE.

In the most southerly portion of that part of Paris which may be best indicated by naming the Boulevard du Temple, there was formerly to be seen, conspicuous for its unwholesome and repulsive-looking water, the Canal de l'Ourque—a place even more unsightly than canals passing through great cities usually are. It was a favourite resort of suicides, and there are few French novelists who have not in more than one of their sensational fictions described some tragic event in connection with it. Where such scenes were, the magic wand of an ingenious horticulturist has caused a garden to appear, removing from public view the unsightly canal without impairing its usefulness. The canal and its towing paths have been arched over at a sufficient height not to impede the traffic, which now takes place through a tunnel, and a handsome garden has been planted in the ground thus improvised above the course of the canal. The diagram No. 1 shows a section through the arched tunnel with the garden above, and also one of the tunnel roadways for returning horses or other purposes. This creation of a garden "without a site," as it were, may be fairly described as a new "hanging garden," a thing of beauty suspended over and veiling a public eyesore, so that, in theatrical phrase, the horticultural creator of the scene might fairly have said, on the completion of his work, "exit a nuisance, enter a garden." The scene painter and his shifter could not in fact have produced a more striking transition of effects.



Section showing Canal, Garden, and Road.

Diagram No. 2 represents the ground plan of the garden over the Canal de l'Ourque. In the centre is a spacious basin surrounded by a handsomely moulded stone coping, and in the midst of the basin rises one of those handsome fountains, of which continental nations have the secret, and which it would seem that we insulars have not even the capacity to imitate—if we may judge from the wretched attempts in Trafalgar Square and Kensington Gardens. The central enclosure of this ingeniously created Parisian garden is terminated at either end, within the enclosure, by circular shrubberies, which, in a garden necessarily formalistic in style, are productive of a pleasing effect. Beyond are two rows of trees, forming handsome avenues, in the course of which occur handsome stone seats, and architecturally designed lamps, which are lighted at dusk during the winter season.

Diagram No. 3 represents a longitudinal section, showing the effect, in profile, of the central enclosure, the circular shrubberies, and the handsome fountain. This garden is a good example of what might be done by "Metropolitan Boards of Works" in many great cities less advanced than Paris, in the art of city embellishment and improvement. In dirty, ugly, and unwholesome Berlin, for instance, what an improvement might be effected! what an embellishment achieved, by covering the course of the stench-emitting Spree with such a garden as that which now conceals a portion of the Canal de l'Ourque in Paris. H. N. H.

THE FRUIT GARDEN.

PEACHES AND NECTARINES IN POTS.

BY THOMAS RIVERS.

Few fruit trees give more satisfaction in the orchard house than a choice selection of Peaches and Nectarines. When in blossom in early spring, the trees are so fresh and beautiful—they are so exceedingly prolific; and in autumn what can vie in beauty with a ripe Peach or Nectarine? And what, to the lover of fruit trees, can be more gratifying than to see his sideboard or dining-table decorated with Peach-bushes in pots, studded with their lovely and perfectly ripened fruit?

CULTURE.

If bushes of only a moderate size be required, 11-inch pots may be used. It is surprising to see the vigorous growth and fine fruit of Peach trees in 11-inch pots; for owing to the compost being rammed down, a large quantity of nutriment is comprised in a small space. I may as well, however, state, once for all, and for all descriptions of fruit, that, if fewer and larger trees be required, larger pots may be employed; thus, 13, 15, or 18-inch pots may be used with equal success. A Peach or Nectarine tree may thus, in two or three years, be made capable of bearing many dozens of fruit; but I must confess that my taste inclines to small prolific trees, because one can have greater variety in a small space; and small trees are pretty, and easily looked over, so that each leaf and bud, each blossom and fruit, is known. If Peach trees already in pots, and in a bearing state, can be purchased, so much the better, for then a year is saved; but as such are more expensive than either "maiden" or "cut-down" trees, these had better be purchased. I may here state that "cut-down" trees are two years old, and, if nice healthy trees with fully ripened shoots can be found, they are better than "maiden" trees. But as they are not often to be met with, I will first give the treatment required by one-year-old or "maiden" trees.

PRUNING.

The trees have one shoot, more or less vigorous, which should be well furnished with buds towards its base. This shoot must be cut clean off with a sharp knife at the seventh bud from its base, and the tree then potted towards the end of October or early in November. This season is recommended, but it may be departed from; for my Peaches and Nectarines are sometimes not potted till March, yet they make fine growth. The following summer every bud will, or ought to, produce a shoot. If there are seven shoots the tree is formed for the season; they need not have their tops pinched off, but will merely require the laterals (small side-shoots) pinched off to within two buds of their bases, as soon as they are 4 inches long. This will induce the ripening of the shoots, so that by the end of the summer they will be full of blossom-buds. At the end of August the point of each shoot should be pinched off, and they will then only require the annual pruning, either in autumn or in spring, for which directions are given. If the tree puts forth a fewer number of shoots than seven, the tops of all should be pinched off early in June; each shoot will then put forth three or more young shoots; all that are not required to form the tree must be pinched off in the same way as laterals, leaving seven or, if the tree be vigorous, nine shoots to each tree. These trifling manipulations are easy to do, but difficult to describe; so, to make the matter as clear as possible, let us place a young tree before us early in June, with five branches, each 12 inches in length; then let us, with a sharp knife, shorten each branch to 9 inches; then, at the end of June, let us take the same tree in hand, and we shall find that each shortened branch has put forth two or three shoots; we must pinch these so as to leave on four branches two, and on one only one, making nine shoots, which as they grow should have their laterals pinched off regularly; they will then make vigorous trees in one summer, and form an abundance of blossom-buds. No other pruning is necessary the first season; and if abundant ventilation and syringing daily have been attended to, the fruit-buds will, towards the end of August, begin to be fully developed. The experienced gardener can at once distinguish them: such a person may prune his trees early in October. Let me endeavour to tell how to distinguish a fruit-bud, which, by the way, is the only bud to prune down to.

FRUIT-BUDS AND WOOD-BUDS.

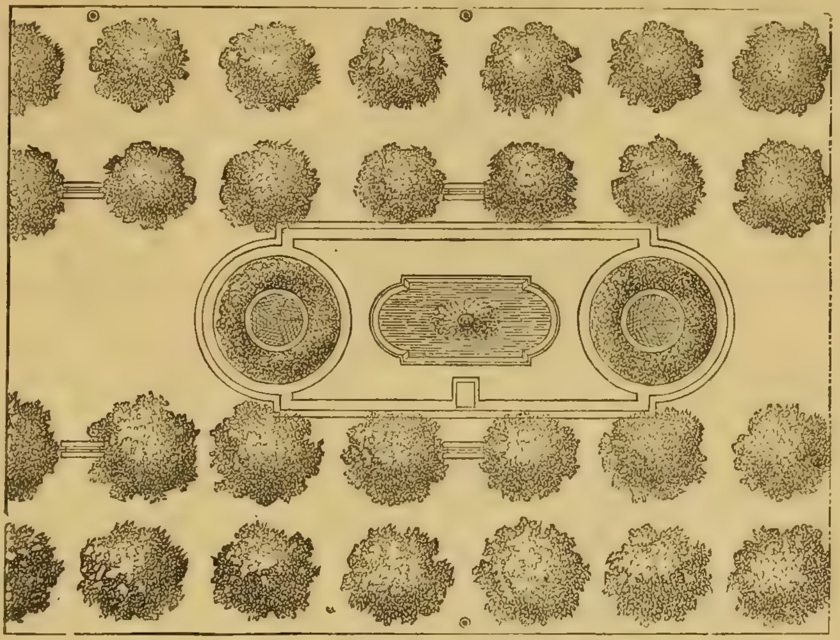
Towards the base of each of your seven or nine shoots, you will find four or five pointed single buds, covered with their brown coats: these are leaf-buds. Next to these, and higher up the shoots, are triple buds—a plump silver-coated one on each side, and a thin one in the centre: these plump silvery buds are blossom-buds, and the central one a leaf-bud, which produces a shoot so necessary to the well-being of the blossom-buds, that without it they would be abortive. Be sure to have on each shoot, if possible, nine to twelve of these triple buds, and cut off the shoot close to one of them; if this cannot be found at the proper place, so as to be able to form the foundation of a nice, regularly-shaped, bush-like tree, cut off the shoot at a leaf-bud. If the trees be pruned in autumn, the buds are difficult to distinguish; it will, therefore, be better for the beginner not to prune his Peach and Nectarine trees till February, or early in March, when every bud will plainly show its character; the blossom-buds by that time will have opened their silvery coats, and the bright pink will be peeping out. If the shoot be cut off at a single blossom-bud, it will die down to the next leaf-bud; this must, therefore, be carefully avoided.

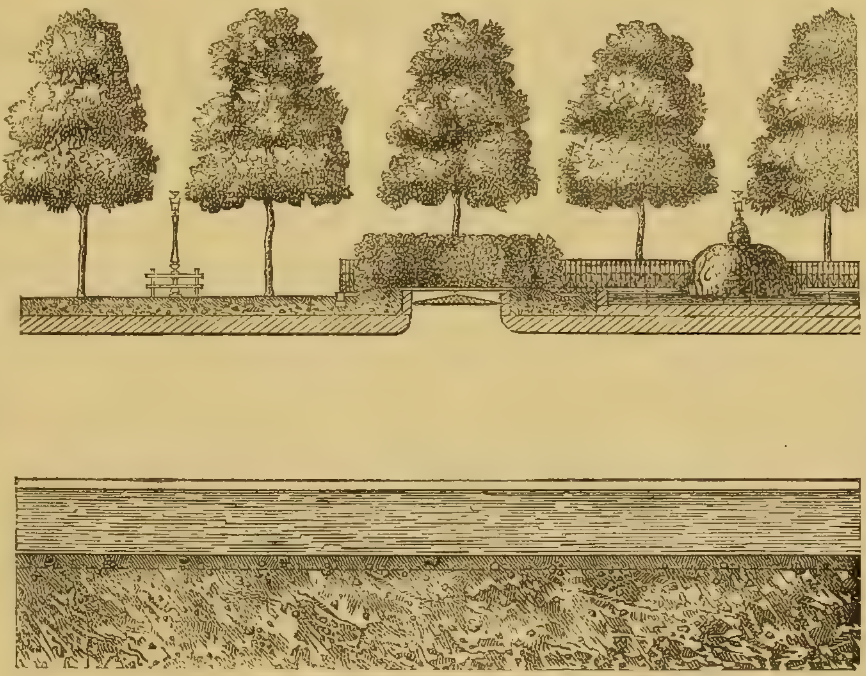
SPRING PRUNING.

Let us now proceed with the culture of our maiden tree. A season has passed; it is early spring, say the middle of February, and our tree, with its nine branches of the last summer's growth, is before us; three of these should be cut down to within five buds of their basis, to give a supply of young shoots for the succeeding year, and six should be cut down, so as to leave on each branch ten or twelve triple buds. These are the fruit-bearing branches for the present season—and so it must be every year; a few branches, say one-third, must be cut in closely on opposite sides of the tree, to give young shoots, and the remainder left as above to bear fruit. Those shoots that have borne fruit will often require to be cut out, to make the tree dwarf and prevent its becoming naked, as the spurs die after bearing, unlike those of the Apricot and Plum, which continue to bear fruit for many years. Much will depend upon the sort cultivated, and the vigour of the tree. One thing must be borne in mind—do not let the tree become bare of young shoots towards its base, and tall and straggling. If pruned in spring, the nature of every bud may be seen, and the tree formed, by the proper use of the knife, into a fruitful beautiful bush. When the trees are in a bearing state, many short spur-like shoots, from 4 to 6 inches long, will be made every season on the stem and towards the base of the principal branches. These will be generally covered with single blossom buds and a terminal leaf-bud: they may be removed if too much crowded, but never shortened. From twelve to fifteen leading shoots should be left, in summer pruning, on each tree when in a full bearing state. I have thus endeavoured to follow the "maiden" tree to its fruiting state. The "cut-down" tree, which should have four or five branches, should be potted in autumn and pruned in early spring: each branch must be shortened to 6 inches; these will put forth numerous young shoots, which in June should be thinned out with a sharp knife, leaving nine or more shoots to be pruned the following spring, as above directed. If trees in pots three or four years old in a bearing state can be purchased, it is a saving of time; for, if they be potted before Christmas, a crop of fruit may be expected the ensuing summer. In such trees, the shoots intended to bear fruit, and covered with triple blossom-buds, may be shortened to ten buds, and those which are to make young shoots for the next year's bearing should be shortened to five buds.

SUMMER PINCHING.

Pruning of bush-trees by summer pinching only has been practised here to a large extent. As this is the most simple of all the methods of pruning known, and may be practised by any lover of gardening who does not mind employing his finger and thumb when walking in his orchard house, it is worthy of a few lines of description. A Peach or Nectarine tree of the usual bush-like form, two, three, or four years old, may be potted in the autumn. In March its shoots should be shortened to about half their length, forming the tree into a round bush. In May it will put forth young shoots. As soon as they have made four or five leaves, the fourth leaf, with the end of the shoot, must be pinched off, leaving three leaves, exclusive of one or two small leaves at the base of the shoot, which are without buds; every shoot must be thus operated on. In eight or ten days a fresh crop of shoots will show itself, for from the bud at the base of every leaf a shoot will spring forth. These, as soon as they are ready, must all be pinched down to three leaves, and so on all through the summer with every fresh crop of young shoots till the end of July; for if the pinching be continued till the end of August, a great number of the shoots will be a mass of blossom-buds, without a terminal shoot or leaf-bud; and although they may be cut out, and yet leave more blossoms than the tree can carry on to a fruiting state, it is as well to have most of the spurs with a terminal shoot or leaf-bud. If bush-trees are in very large pots, or planted in the borders of a large house, and it is desired to have them increase more rapidly in size than pinching to three leaves will lead to, the pinching should be at the sixth or eighth leaf, leaving five or seven in every operation instead of three. This is applicable to all kinds of fruit-trees under summer pinching, when large trees are wished for. My trees, under this incessant pinching, are sturdy bushes, full of blossom-buds, and quite pictures of robust health, and the fruit they bear is always large and high-coloured, owing to its full exposure to the sun. In March it will be good practice to thin out some of the numerous blooming spurs and clusters of blossom-buds with a sharp penknife, otherwise the trees will be too much crowded with blossoms. This thinning out may also often be done in summer with advantage; for, if the trees grow very luxuriantly, the young shoots become crowded, and the thick mass of leaves shades the fruit too much; in such cases the young shoots may be thinned out in the month of July, much to the advantage of the tree. This simple and charming method of pruning, only occurring to me in 1858, was fully carried out in the summer of 1859. I am quite at a loss to account for its not having been discovered earlier. As far as regards myself, I think it was the fear of inducing, by incessant pinching, too many young shoots to break out that deterred me from practising it. Reasoning from theory only, I imagined it to be impossible for young shoots made in August to ripen, forgetting the warm autumnal atmosphere of the orchard house. I do not hesitate to assert that this simple step forward of pruning by incessant summer pinching is one of the most successful advances that have ever been made in fruit-tree culture under glass. I may add, that if by any neglect the pinching of the shoots in June and July has not been attended to, so that the trees have made shoots of from 2 to 3 feet in length, these may be shortened with a sharp knife to ten or twelve leaves. The bud at the end will then form itself into a leaf-bud, and even make some small growth, while all the buds below will remain fruit-buds, and quite dormant till spring. I tried this experiment in August, 1861. No anxiety need now be felt even by the lady orchard-house cultivator—no advice need be asked of the too-often-unwilling-to-give-it gardener. Thinning in early spring those pretty clusters of blossoms with a penknife (for they are always too numerous, and at least half of them may be cut out), and at the same time shortening shoots that are irregular; and in summer pinching off the ends of the young shoots, always fragrant, so as to give symmetry to the tree and make it pleasant to look on, are all agreeable operations. The climate of the orchard house will do all the rest, and a Peach tree in a pot *will* bear fruit even under very adverse pruning circumstances, much more under a lady's loving, yet pinching, care. All that seems to be required is to make the tree symmetrical, and prevent its bearing too bountifully; for it must be borne in mind that fruit from a tree overloaded, whether under glass or in the open air, is never of fine flavour. Peaches, Pears, Plums, Apples, and indeed all descriptions of fruit, suffer in flavour to an extent scarcely thought of, if the tree be allowed to bear too many. It is better to have one dozen of Peaches large, and of fine flavour, than two dozen small and inferior; besides this, a tree suffered to bear too large a crop will be sure to fail the following season. There are two methods of cultivating these fruits in orchard houses, both equally favourable to their well-doing; one is to cultivate the trees in pots, the other to plant them in the borders of the houses. With the large houses, the most eligible form of tree to plant in pots is the pyramidal; this most interesting form succeeds better in pots than when planted in the borders; the roots being confined, the shoots are not so gross as those on trees planted in the ground, the sap does not rush to the top so rapidly, leaving the lower branches in a weakly state; in fact, it seems more regularly distributed, so that for many years a pyramidal Peach or Nectarine tree, in a pot from 15 to 18 inches in diameter, will gradually increase in beauty, and by the simple operation of pinching all the young shoots formed during the summer to two, three, or four leaves, a fruitful and beautiful pyramid, 10 feet or more in height, may be formed. Such trees, placed among others planted in the borders, are most ornamental, showing, as they will do if attended to, perfect cultivation. The health and fertility of such trees is kept up by giving them every season some fresh food in the shape of a rich compost formed of loam (if tenacious, all the better) and manure, thoroughly decomposed, in equal quantities. This operation should be performed about the


No. 2. Plan of Canal Garden. (See p. 395.)


No. 3. Longitudinal Section of Canal Garden. (See p. 395.)

last week in October, by removing the surface soil, generally a network of fibrous roots—to a depth of 4 inches, and replacing it with fresh compost of the description just given. The most important matter connected with the culture of trees in pots is keeping their roots dry during the winter months, so that they are not too much excited—they are never at rest; the shoots then become dry and ripe, and in a fit state to put forth their blossoms in spring, which, owing to the trees not being subjected to the great atmospheric changes incident to the open air in an English winter, they do with great vigour. To make success doubly sure, this dryness of the soil in the pots must be strictly attended to. The trees should be well watered when top-dressed, and again before the middle of November; they may then, if in the large pots I have mentioned, remain without water till early in March, when the blossom buds begin to swell. Many failures in the pot culture of fruit trees have occurred from the fears entertained by cultivators that trees must always have their roots in a soil saturated with moisture—the great evil of our English climate; for, if the roots of our fruit trees in the open air could be kept from the heavy rains of our winter months, we should have much greater success in the culture of the more delicate kinds of fruits. Before I leave the subject of pot culture, I must mention the necessity of giving the trees extra food during the summer months. This is best done by placing on the surface of the mould in the pot a layer of some rich compost, about 3 inches in depth at the outside, and made concave round the stem of the tree, so as to retain water. This compost may consist of manure chopped into small pieces, and saturated with liquid manure; or horse droppings from the roads, and kiln-dust from a malt-house, equal quantities, also saturated with liquid manure; the latter compost is the most valuable surface dressing ever invented, for not only do the roots of Peach trees come to the surface to feed upon it, but Vines, if dressed with it, show extraordinary vigour. If a Vine in a pot has a dressing of it from 6 to 8 inches deep (this must of course be supported by pieces of slate stuck inside the rim), the roots ascend rapidly, and seem to devour it with avidity, so that by the autumn a mass of this compost on the surface of the soil in the pot, in which a Vine has been growing all the summer, will be found a complete mass of fibrous roots, hard and compact, the virtue of the compost being seemingly absorbed.

PLANTING OUT OF PEACHES AND NECTARINES.

I have thus far endeavoured to give an outline of the pot culture of Peaches and Nectarines in unheated glass structures. The other method of cultivation, by planting the trees in the borders, must next be considered; this is neither more nor less than planting a Peach garden, such as one would do in Italy or in some of the States of North America. Still, as a glass structure is of more value than a piece of uncovered ground, care must be taken that it is made the best of. There is a peculiar feature in most stone fruits—their love of a firm soil. A light, porous soil is generally fatal to the health of a Peach tree, at least in the gardens of Europe. How the light soils of Buenos Ayres and other parts of South America act on the constitution of the Peach tree I am not able to say; I only know from report that the trees make good firewood. In orchard houses, I am now able to assert, with full confidence, that a firm border for Peach and Nectarine trees is a *sine quâ non*; there is no sound prospect of success without it; and I may add, that if such a border is calcareous, or can be made so by mixing one square yard of chalk to ten of the natural soil, so much the better for the fruit trees. In forming the borders, the soil should be refreshed with a slight dressing of manure, and then stirred to a depth of 20 inches—no other preparation is required. The trees should be planted in this rather shallow border, heavily watered, and suffered to remain for a week; at the end of that time the entire border should be gone over with a rammer, and rammed firmly down; a wooden rammer of about 10 lbs. weight will be found the best implement. The border thus rammed and levelled should remain solid, and never again be stirred, except to be slightly pricked with a fork in spring—early in March—to admit water to the surface roots of the trees. After being watered, a slight dressing of rotten manure, about 1 inch in depth, should be laid on the surface of the solid soil, and no other disturbance of it should take place. So obnoxious is the disturbance of the soil to the roots of Peach and Nectarine trees when planted out—although the inert surface mass of fibrous roots may be removed from trees in pots without injury—that I have seen, in an otherwise well-managed house, fine and well-grown half-standard trees quite bare of fruit, owing to the borders having been carefully dug 6 inches in depth in spring, every blossom having consequently dropped without setting its fruit.—*The Orchard House.*

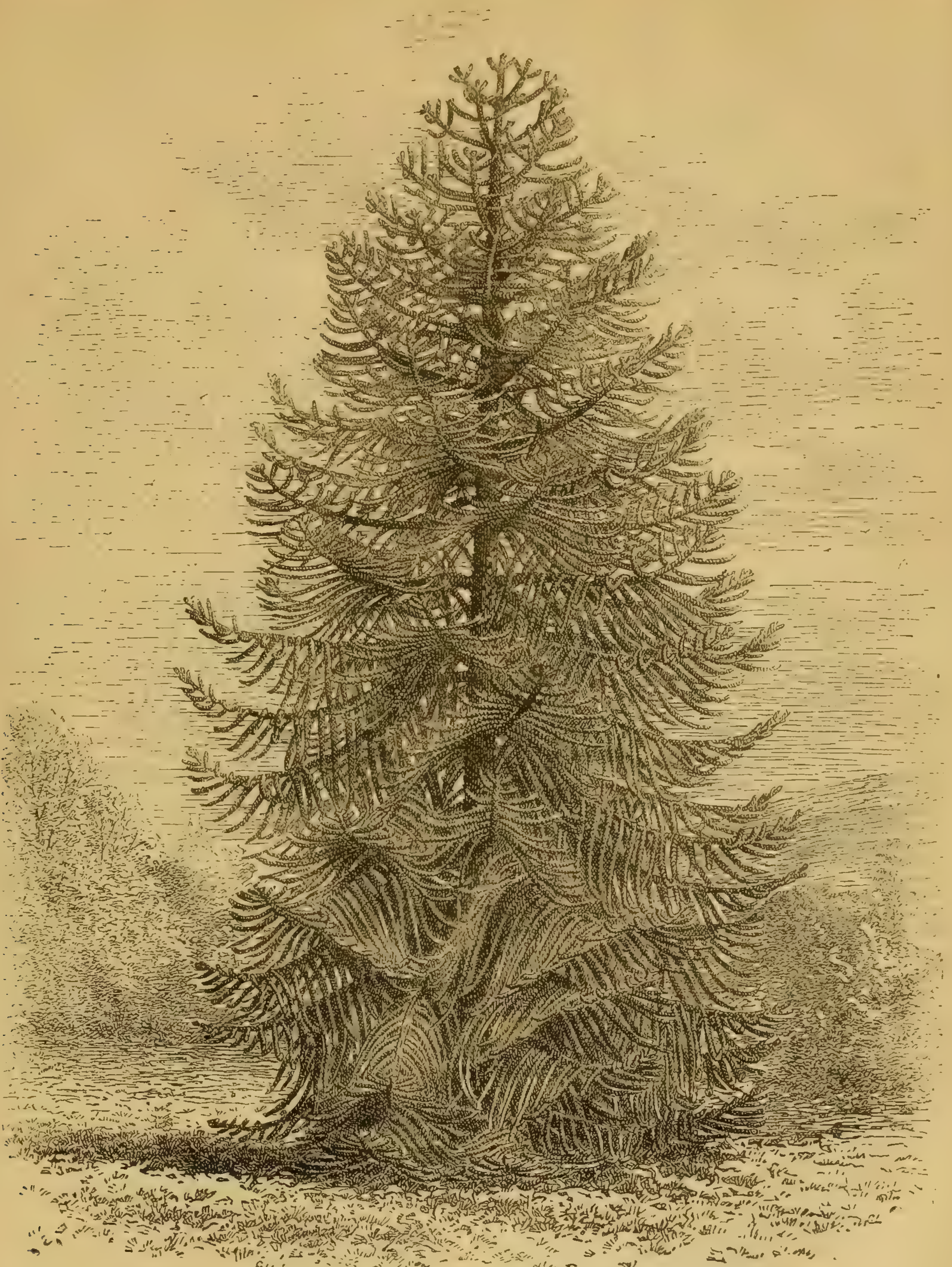
A PROFESSOR'S wife, who occupied herself sometimes in assisting her husband in making casts of interesting objects of geology and natural history (says a scientific contemporary), also for her own pleasure sometimes made flowers and fruits of wax and other materials; but notwithstanding that she had become quite a successful expert in this line, she found that almost always her efforts were criticised by her friends. Once, at a tea-party, she passed a large Apple round, and stated her confidence that this time she had been quite successful in her imitation of nature's product; but her friends were, as usual, not of her opinion. One criticised the shape, saying it would be more natural if it were not so globular; another criticised the colours, and said it was better than other imitations, but that she had not quite hit that natural indescribable peculiarity which distinguishes the natural Apples from the imitations: almost every one had some fault to find. After the Apple had been passed round and had come into her hands again, she ate it without saying anything. Her friends had been criticising a real Apple, but never afterwards criticised her imitations of fruit.

THE ARBORETUM.

ARAUCARIA IMBRICATA.

THE subject of the accompanying illustration forms one of the most interesting trees in the grounds at Woodstock, the property of the Right Hon. W. F. Tighe, where there is such abundant wealth of arboricultural treasures as is to be found in few other places in Ireland. This fine Araucaria was planted nearly fifty years ago by Lady Louisa Tighe, by the side of a pretty oval Rose garden, and opposite it a match tree was planted at the same time, but that tree died more than twenty years ago. Owing to the fine, healthy appearance of this tree, it has been supposed that the subsoil at Woodstock was peculiarly favourable to the growth of the Chili Pine, and this induced Colonel Tighe to plant Araucarias extensively, even when they were expensive. It was soon discovered, however, that the clay-slate, combined with the iron pan, which is the natural formation of the home-grounds of Woodstock Park, was unsuited to the healthy development of the Araucaria, and, excepting the one great tree now figured, not another healthy Araucaria, out of all that were planted, can be found. The success attending the tree which has escaped has arisen from its having been planted on artificially made ground, formed when the Rose garden referred to was made. There is no mystery about this; the newly-made ground suited the natural requirements of the tree, and visitors to Woodstock Park may now see in this Chili Pine what rapid growth this noble tree will make in our climate when properly treated. In Ireland it is seen in almost every garden of any importance, but rarely in a healthy state if above 10 feet in height. This arises in a great degree from little regard having been paid to its natural wants when it was planted. The Chili Pine never loses its leaves except from disease or accident. It succeeds best on a rocky bottom, or on a thoroughly dry subsoil. In the wet seasons of 1861-62, the tree at Woodstock showed unmistakeable signs of suffering from wet, and to remedy this a drain was put in on the upper side of the tree (the ground lies on a slope), to cut off the water above it. This drain was from 6 to 11 feet deep, and was filled to the top with stones. Decay was thus arrested, and the tree made a distinctly vigorous growth the following year. It was surface-dressed with peaty sods and granite chips, through which the upper roots of the tree ran like those of a Vine. In cutting the drain referred to, the site of the match tree was cut through, and clearly showed that when the roots had left the bit of made soil in which the tree had been planted they perished, with the exception of a few thongs which had penetrated into the stiff natural subsoil. It is worth stating that Colonel Tighe so much appreciates the stately grandeur of this fine Araucaria, that, besides it, he has a fine avenue of this tree, and considerable plantations of it have been made on suitable sites, on which from thirty to forty loads of the best materials within reach have been put. At about 1 foot from the ground the girth of the tree now illustrated has increased annually at the rate of 2 inches. The girth of the bole is now about 7 feet; the height is about 50 feet, and last year it produced cones for the first time.

Phœnix Park. CHAS. MCDONALD.



THE GREAT ARAUCARIA IN THE GARDENS AT WOODSTOCK, KILKENNY—Height 50 Feet.

JAPAN CONIFERS.

I have been induced to make a few notes on this most interesting family of Conifers, in the hope that my doing so may lead to their being more generally planted. The eye never grows tired of a collection of them, presenting as they do an agreeable diversification which I think can scarcely be seen in any other class of the Fir tribe. Take for instance Retinospora pisifera and obtusa. These are fine handsome timber trees, growing from 70 to 100 feet high. The first, I find, grows faster than any other Conifer at this place. The habit of growth is very graceful, somewhat resembling that of the Deodar. It seems to love a moist situation, and on a well-drained bog is quite at home. I have observed that, although as a rule rabbits are particularly fond of this family of Conifers, they seem to care little for this species. R. obtusa is not by a long way so fast a grower, and, although it is represented to be by far the largest tree in its native haunts, it will never, I think, make so large a tree as pisifera in this country. I find pisifera to make an average growth of 3 feet to obtusa's one. The character of obtusa is more that of a bush than of a tree, its graceful pendent branches forming handsome round heads of a light green, tinged with a purplish hue. Nothing can be better for winter decoration of beds, being so hardy and compact in habit. It also bears moving well. R. obtusa nana and its golden variety, aurea, are invaluable for planting in centres of round flower beds or for edging large ones, or forming the second or third row in middle-sized beds in winter. In a word, they are useful plants for many different purposes when from a few inches to 2 feet high. Instead of the ever and again repeated Biota aurea, both in large and villa gardens, let us have, like the Japanese, a goodly number of these Retinosporas, and also of Retinospora pisifera aurea plumosa. This is a great favourite of mine, and indeed of all who have seen it. It is much hardier than Biota aurea or gracilis; in fact, the whole family of Retinospora is much more so than the Biotas are. Where we cannot get a presentable tree of B. aurea, our eyes may often alight on the fresh, healthy, feathery golden heads of R. pisifera aurea plumosa. I cannot deny the beauty of B. aurea when in a healthy condition; but it must have a dry warm subsoil, and as little rain and frost as possible, to retain its beauty, and then to me it has an air of stiffness that is quite wanting in the Retinosporas. In wet, cold-lying situations, where light-coloured trees of this character are wanted, we use only the Retinosporas, excluding the Biotas *in toto*. There are other Retinosporas with something of the same aspect as pisifera aurea plumosa—pisifera aurea, for instance, a distinct and desirable variety, not quite so golden and more Heath-like in its growth. This and the three other varieties of pisifera are very distinct subjects as dwarf trees. Well may the Japanese so highly esteem them, and grow them so extensively in pots. A handsome plant of R. pisifera aurea plumosa, in a pot, was shown in the excellent collection of Conifers of the Messrs. Barron, at the late Royal Horticultural meeting at Birmingham. I believe most people, like myself, thought it the most striking plant of the whole collection. I was surprised to see but this one out of so many beautiful varieties of Retinospora. We all know a Thuja, a Biota, or a Cupressus as old friends, and see them every day, but in such collections we look more for something with which we are not so familiar.

I will now turn to quite a different type; it is the peculiar and interesting thread-branched Japan Cypress, filifera. I know of no Conifer anything like it in character. It might be well designated the Weeping Retinospora, and is very suitable, I should think, for planting in cemeteries. And how grand for placing in vases or centres of beds! It is like Amarantus salicifolius in its outline when trained to one stem (which it always should be) and well furnished at the bottom. Placed in a pot or vase, it will throw its curved thread-like branchlets over the sides in the most pleasing manner. I can recommend it with confidence to all who want a weeping tree of a small size. One more species is so distinct from the rest that one can scarcely believe it to be a Retinospora; it is ericoides (the Heath-like Japan Cypress. This assumes during the winter a beautiful tinge of purplish hue on a pale silvery ground, which with its tiny Heath-like branchlets presents a charming contrast to the other species. Its growth is rather slow, and conical in character, and it is well adapted for Italian parterres instead of the Irish Yew. Like all the rest it is very hardy, and bears removing well. It is a good pot plant, invaluable for small villa gardens, &c. It is no exception to the rest of the family in doing well on a drained bog; but unfortunately, the rabbits are particularly fond of it—so much so that out of scores planted here not one is left whole. I thoroughly believe, if there are rabbits within a mile of it, they will find it out. Out of their reach, it should be planted largely on rockeries, margins of mixed borders, &c., and in gardens where winter decoration is carried out. Nothing can be propagated with greater ease by cuttings under a hand-light in the autumn in a free, sandy soil, with good drainage, the soil pressed firm, with an inch of sand on the surface. Set the cuttings about 2 inches apart, give a good watering, to settle them, and then dry off the surface moisture, and put on the light, which should be allowed to remain, unless damp makes its appearance, when it should be removed for a short time. This, with a little dry sand or charcoal sprinkled on the surface, will arrest the damp at once. Take care that they have little or no sun for some months after being planted. If all goes on well, they will be rooted by the following August. They can then be planted in brick pits, and shaded for a while until they are quite established. When hard weather appears they must be protected by old lights or wooden or straw shutters, always giving light and air when the weather is favourable. After spring they will well be able to take care of themselves without protection, if their other wants are attended to. The trouble of raising the stock at home ought not to prevent their being used largely, the price of plants at the nurseries, too, being within the reach of everyone.

There are yet many other varieties deserving a word in this list, which, however, is not meant to be an exhaustive treatise, but merely a rough sketch of a few of the most desirable kinds. I must not, however, omit R. leptoclada (the flat-branched little Cypress), which is interesting indeed—its stiff, rather formal, spiral, dense, flat, purplish, branchlets giving the slow-growing little tree the appearance of having been artificially bronzed. With this and a passing mention of the graceful and Fern-like R. filicoides, I end my remarks.

Maesgwynne, South Wales, in "Field." J. Taylor.

Corchorus (Kerria) japonica.—It is somewhat singular that the double-flowered variety of this plant should be so little grown. I saw a fine example of it in flower the other day, and few plants could be more showy seen against a red brick wall in April. It is a plant of the freest growth and simplest culture, and can be increased to any extent by means of cuttings, layers, or suckers. The latter, in fact, become troublesome in some positions. Once give the plant a footing in the garden, and it is not very easily got out again; yet it has been eradicated from most gardens, and one seldom sees it now unless in the garden of the parsonage or of the cottage. In warm sheltered places it does well in a bush form, like a stool of Raspberries, the flowering shoots being cut to the ground annually, and young ones brought up to succeed them. On a wall it may be carried to a great height; and perhaps is most effective when its yellow Marigold-like flowers are interspersed with the drooping bunches of the Blue Laburnum—if I may take the liberty of calling the Wistaria sinensis by such a common name.—F.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Pyrus Malus spectabilis.—We have recently observed some specimens of this in the Heatherside nurseries, worked so low that the branches laden with their brilliant buds nearly touch the ground. In this form this brilliant tree struck us as one of the best of all, for lawn or pleasure ground, when isolated or grouped on the turf.

Remarkable Oaks.—In Bagot's Park, Staffordshire, are some very fine Oaks. One, called "The King's Oak," is 120 feet high. Another, "The Beggar's Oak," has a girth of 40 feet at the height of one foot from the ground; and one of its branches has a circumference of 7 feet 4 inches at a distance of 15 feet from the trunk. A space of about 4,000 square feet is shaded by its branches.

Chestnut Timber.—In your notice of the Westminster Abbey examples of this timber, you should have stated that it is sweet or Spanish Chestnut, and consequently, though faster in growth than Oak, slower than Horse Chestnut, with which it might be confounded. At Preston Hall, near Maidstone, there is, or was at the time when Mr. Betts purchased the place, a barn roofed with Spanish Chestnut in a splendid state of preservation, and no doubt in many old places it is confounded with Oak.—W. P. A.

Amelanchier canadensis.—I have a dwarf variety of this shrub from one to four feet high, which, in spring, covers itself with white bloom, and in June, or early in July, is loaded with pleasant edible fruit. This I think would please you; I am quite sure it would make a sensation among your lovers of such things, and I should not be surprised if it were esteemed as a fruit-bearing shrub. My only trouble with it is, that the fruit, which is very sweet, is so attractive to birds that I get but little seed.—Geo. Thurber, *New York*.

Wych Elms.—In the gardens at Chiswick House are several large trees of this Elm, and, being in good soil and near the water, they are in remarkably vigorous health. A peculiar characteristic, however, pertaining to them is that they send down, from a height of about 30 feet, naturally pendent branches, issuing from the main ones, to near the ground. These drooping branches are about an inch or very little more in diameter, maintaining this slender proportion throughout their whole length. Have others observed anything like this?—W. F.

Magnolia conspicua.—As a spring-flowering hardy tree this is unsurpassed; for during the latter half of March and the whole of April it is literally a mass of white blossom; seen in front of Pines or other deep green trees it has a grand effect. As an indoor plant, too, it is excellent; for the smallest piece, if rooted and potted and the wood well ripened, will flower from every eye. Plants grafted this spring, and well cared for, will produce from half a dozen to two dozen flowers next year in six-inch pots. Of such plants Messrs. Osborn have this year had many in flower, and their blooms were in no way inferior to those produced by established trees. When placed amongst Ferns and other green-foliaged plants, such charming little trees are extremely effective.—W.

THE INDOOR GARDEN.

DWARF PITCHER PLANT OF NEW HOLLAND.

(CEPHALOTUS FOLLICULARIS).

This forms a neat dwarf greenhouse plant, which grows from 2 to 3 inches in height, and has short spathulate leaves rising from the centre, and comparatively large oblong pitcher-shaped organs, lying on the soil in a somewhat circular outline around the leaves. The pitchers are green, tinged with purple or brown, with several fringed linear plates, extending lengthways on the outward surface of each, whilst the lower lip or mouth is formed with a regularly corrugated or ridged margin. In some varieties, the lid, projecting from the upper or back part, is prettily marked with reddish-crimson bars. It forms one of the most wonderful illustrations of singular vegetable structure and economy. It thrives well in a warm greenhouse temperature, planted in a mixture of chopped sphagnum and rough sandy peat, well drained; the principal precautions are to maintain a porous texture in the material in which it grows, admitting a free circulation of water, with a partially humid atmosphere in summer, but which should be gradually lessened in winter. A partially elevated bell-glass over the plant is often found conducive to its vigour, on account of its maintaining a more uniform temperature around it, and of its serving as a screen from the chilling effects of cold air or water upon the leafy appendages. The accompanying is an illustration of a fine specimen, grown by Messrs. E. G. Henderson.

New Holland Pitcher Plant.

TOUCH-ME-NOT.

IMPATIENS.

This is a genus of plants popularly known as Touch-me-Not, a name given to them on account of the sudden manner in which the valves of the oblong capsule roll back, thus as it were shrinking from the touch. Amongst the numerous species of which the genus consists, many are exceedingly gay flowered, and have the additional recommendation of being free bloomers, and of easy culture; some of the kinds, too, deserve special attention, on account of their blooming during winter, when flowers are scarce. The different kinds of Impatiens, as a rule, do not require much pot room, but they must have the pots well drained. For soil, use good loam, leaf-mould, and thoroughly decomposed manure, mix the whole thoroughly, and whilst doing so, add about a fourth part of sharp sand. Some of the kinds make long straggling growths, but this must not be allowed; if the points of the young shoots are occasionally pinched out, it will induce them to make lateral shoots, and thus nice, handsome, compact plants will be formed. The majority of the kinds about to be enumerated produce the finest blooms, and also the greatest quantities of them, upon young plants of from one to two years of age; and as they grow sufficiently large in that time for most people's accommodation, they need not be kept longer. No apprehension need be entertained of losing the kinds by this system, if care is taken to provide young plants before the old ones are discarded; and as they strike readily from cuttings, this will not be found a difficult task. The annual kinds must, as a matter of course, be obtained every year from seed. Plants of Impatiens in active growth enjoy an abundant supply of water to the roots, and a moist atmosphere, but they do not like heavy syringing; indeed, it will be found most conducive to their health if the syringe is discarded altogether, and the necessary moisture provided by steaming, and by sprinkling the floor and stages with water. In whatever way it may be applied, moisture in the air is quite essential to their well-being, for a dry atmosphere is sure to result in attacks of red spider, which will speedily rob them of their leaves; and flowers without foliage lose half their attractions.

Impatiens Hookeri.—The stems of this species are stout, pale green, and furnished with large leaves. The flowers are large, the petals being very broad, ground colour white, lined and streaked with reddish crimson, and being in full beauty during wid-winter, it is doubly valuable. This species has the reputation of being a shy bloomer, but if a succession of young plants is maintained, there will be little to complain of as to paucity of flowers. It requires the heat of an intermediate house, or cold stove, and may be brought into the conservatory when in bloom. It is a native of Ceylon.

I. repens.—Those who have a little stove Fernery will find this a lovely object, if planted in one of the pockets in the wall, or upon some jutting mass of rock-work. In such positions the stems will trail over and about the stones; these stems are clothed with small intensely dark green leaves, which form an admirable background for the display of its large brilliant yellow flowers, which are produced in great profusion from June to September. It is a native of the Indian Archipelago.

I. Jerdoniæ.—This is a dwarf, compact, East Indian plant, having stout, fleshy, somewhat gouty-looking dark brown stems, bright green leaves, and a crown of brilliant flowers, which continue in beauty for a long time during summer, producing a charming effect. Plants of this species require resting during winter; but they must not be what is termed "dried off." Cultivators too frequently forget that their plants are in pots, and that, if the drying process is carried too far, the soil becomes perfectly baked through and through, and all the roots are killed, and the plants thus become much weakened instead of being simply rested.

I. tricolor.—This is a rare species, the flowers of which are extremely handsome. It comes from West Africa, where it is found at some distance up the Camarron Mountains, and any one having friends in that locality should get them to send them seeds of this Impatiens. It is a free-growing plant, producing a profusion of rich white and plum-coloured flowers during the winter months.

I. Walkeri.—A somewhat slender-growing plant, and also an extremely rare one. It grows some 12 or 18 inches high. The leaves are medium-sized and brilliant green. The flowers are freely produced, and brilliant scarlet in colour. It blooms about the month of June, and continues a long time in full beauty. It is a native of Ceylon.

I. flaccida.—This is a somewhat spreading plant, and requires frequent pinching to render it handsome in shape. The leaves are bright green, some 3 or 4 inches long. The petals are broad, somewhat bilobed, forming a large rosy-purple spreading limb, with a long spur. It blooms during the early spring and summer months.

I. flaccida alba.—In general appearance and habit of growth this resembles the preceding, but its flowers are pure white, and as these are produced all through the winter months, it is a most desirable kind. I would, therefore, strongly urge the necessity of its cultivation. This and the preceding are natives of Ceylon.

I. platypetala.—At first sight this species would seem to be closely allied to flaccida alba, but be that as it may, it is a very desirable plant. It should be made to grow in a compact form; the flowers are large and of a warm rose colour. It blooms during early spring and summer, and sometimes it may be made to bloom in winter; there is a very handsome white variety of this plant, as well as of the previously named. It is a native of the East Indies.

I. latifolia.—This is no doubt nearly allied to I. flaccida, but is nevertheless very distinct. In the first place, it is erect in habit and much taller than flaccida, attaining a height of from 2 to 3 feet, or even more. Its stems are swollen at the joints and furnished with abundance of large dark green leaves. The flowers are large, produced singly from the axils of the leaves, but there are plenty of them, and as they measure nearly 2 inches across, and are rosy purple in colour, they produce a fine effect. It blooms during the autumn and spring, and as it does not require so much heat as the other kinds, it will be found extremely useful for the decoration of the conservatory. It is a native of the mountains of Ceylon.—*Farmer.*

JOHN STUART MILL AS A PLANT-LOVER.

Of the tens of thousands who are acquainted with the philosophical writings of Mr. Mill, there are probably few beyond the circle of his personal friends who are aware that he was also an author in a modest way on botanical subjects, and a keen searcher after wild plants. His short communications on botany were chiefly, if not entirely, published in a monthly magazine called the "Phytologist," edited from its commencement in 1841 by the late George Luxford till his death in 1854, and afterwards conducted by Mr. A. Irvine, of Chelsea, an intimate friend of Mr. Mill's, till its discontinuance in 1863. In the early numbers of this periodical especially, will be found frequent notes and short papers on the facts of plant-distribution, brought to light by Mr. Mill during his botanical rambles. His excursions were chiefly in the county of Surrey, and especially in the neighbourhood of Guildford and the beautiful vale of the Sittingbourne, where he had the satisfaction of being the first to notice several plants of interest, as Polygonum dumetorum, Isatis tinctoria, and Impatiens fulva, an American species of Balsam, affording a very remarkable example of complete naturalisation in the Wey and other streams connected with the lower course of the Thames. Mr. Mill says he first observed this interloper in 1822, at Albury, a date which probably marks about the commencement of his botanical investigations, if not that of the first notice of the plant in this country. Mr. Mill's copious MS. lists of observations in Surrey were subsequently forwarded to the late Mr. Salmon, of Godalming, and have been since published with the large collection of facts made by that botanist in the "Flora of Surrey," printed under the auspices of the Holmesdale (Reigate) Natural History Club. Mr. Mill also contributed to the same scientific magazine some short notes on Hampshire botany, and is believed to have helped in the compilation of Mr. G. G. Mill's "Catalogue of the Plants of Great Marlow, Bucks." The mere recording of isolated facts of this kind of course affords no scope for any style in composition. It may, however, be thought worth while to reproduce here the concluding paragraph of a short article on "Spring Flowers in the South of Europe," as a sample of Mr. Mill's popular manner, as well for its own sake as a fine description of a matchless scene. He is describing the little mountain range of Albano, beloved by painters, and, after comparing its vernal flora with that in England, goes on:—

> If we would ascend the highest member of the mountain group, the Monte Cavo, we must make the circuit of the north flank of the mountains of Marino, on the edge of the Albano Lake, and Rocca di Tassa, a picturesque village in the hollow mountain side, from which we climb through woods abounding in Galanthus nivalis and Corydalis cava, to that summit which was the *arx* of Jupiter Latialis, and to which the thirty Latian cities ascended in solemn procession to offer their annual sacrifice. The place is now occupied by a convent, under the wall of which I gathered Ornithogalum nutans, and from its neighbourhood I enjoyed a panoramic view, surely the most glorious, in its combination of natural beauty and grandeur of historical recollections, to be found anywhere on earth. The eye ranged from Terracina on one side to Veii on the other, and beyond Veii to the hills of Sutrium and Nepete, once covered by the Ciminian forests, then deemed an impenetrable barrier between the interior of Etruria and Rome. Below my feet the Alban mountain, with all its forest-covered folds, and in one of them the dark blue lake of Nemi; that of Albano, I think, was invisible. To the north, in the dim distance, the Eternal City; to the west the eternal sea; for eastern boundary, the long line of Sabine mountains from Soracte, past Tibur, and away towards Præneste. The range then passed behind the Alban group, but reappeared to the south-east as the mountain crescent of Cora and Pometia, enclosing between its horns the Pontine marshes, which lay spread out below as far as the sea line, extending east and west from Terracina in the Bay of Fondi, the Volscian Anxur, to the angle of the coast, where rises suddenly, between the marshes and the sea, the mountain promontory of Circeii, celebrated alike in history and in fable. Within the space visible from this one point the destinies of the human race were decided. It took the Romans nearly five hundred years to vanquish and incorporate the warlike tribes who inhabited that narrow tract; but, this being accomplished, two hundred more sufficed them to complete the conquest of the world.

During his frequent and latterly prolonged residence at Avignon, Mr. Mill, carrying on his botanical researches, had become very well acquainted with the vegetation of the district, and at the time of his death had collected a mass of notes and observations on the subject. It is believed to have been his intention to have printed these as the foundation of a flora of Avignon. In the slight contribution to the literature of botany made by Mr. Mill, there is nothing which gives any inkling of the great intellectual powers of their writer. Though always clear and accurate, they are merely such notes as any working botanical collector is able to supply in abundance. Mainly content with the pursuits as an outdoor occupation, with such an amount of home-work as was necessary to determine the names and affinities of the species, Mr. Mill never penetrated deeply into the philosophy of botany, so as to take rank among those who have, like Herbert Spencer, advanced that science by original work either of experiment or generalisation, or have entered into the battle field where the great biological questions of the day are being fought over. The writer of this notice well remembers meeting, a few years since, the (at that time) parliamentary logician, with his trousers turned up out of the mud, and armed with a tin insignia of his craft, busily occupied in the search after a marsh-loving rarity in a typical spongy wood on the clay to the north of London. But, however followed, the investigation of nature cannot fail to influence the mind in the direction of a more just appreciation of the necessity of system in arrangement, and of the principles which must regulate all attempts to express notions of system in a classification. Traces of this are not difficult to find in Mr. Mill's writings. It may be safely stated that the chapters on classification in the "Logic" would not have taken the form they have, had not the writer been a naturalist as well as a logician. The views expressed so clearly in these chapters are chiefly founded on the actual needs experienced by the systematic botanist, and the argument is largely sustained by references to botanical systems and arrangements. Most botanists agree with Mr. Mill in his objections to Dr. Whewell's views of a natural classification by resemblance to "types" instead of in accordance with well selected characters; and indeed the whole of these chapters are well deserving the careful study of naturalists, notwithstanding that the wonderfully rapid progress in recent years of new ideas, lying at the very root of all the natural sciences, may be thought by some to give the whole argument, in spite of its logical excellence, a somewhat antiquated flavour.—*H. Trimen, in Examiner.*

THE GARDEN IN THE HOUSE.

MULTIPLE FLOWER VASES.

As with the first four rules in arithmetic, so with the various forms of flower-vases; they may conveniently be classified under the headings of simple and compound. By compound forms, I mean combinations of two or more receptacles for flowers in the same stand.

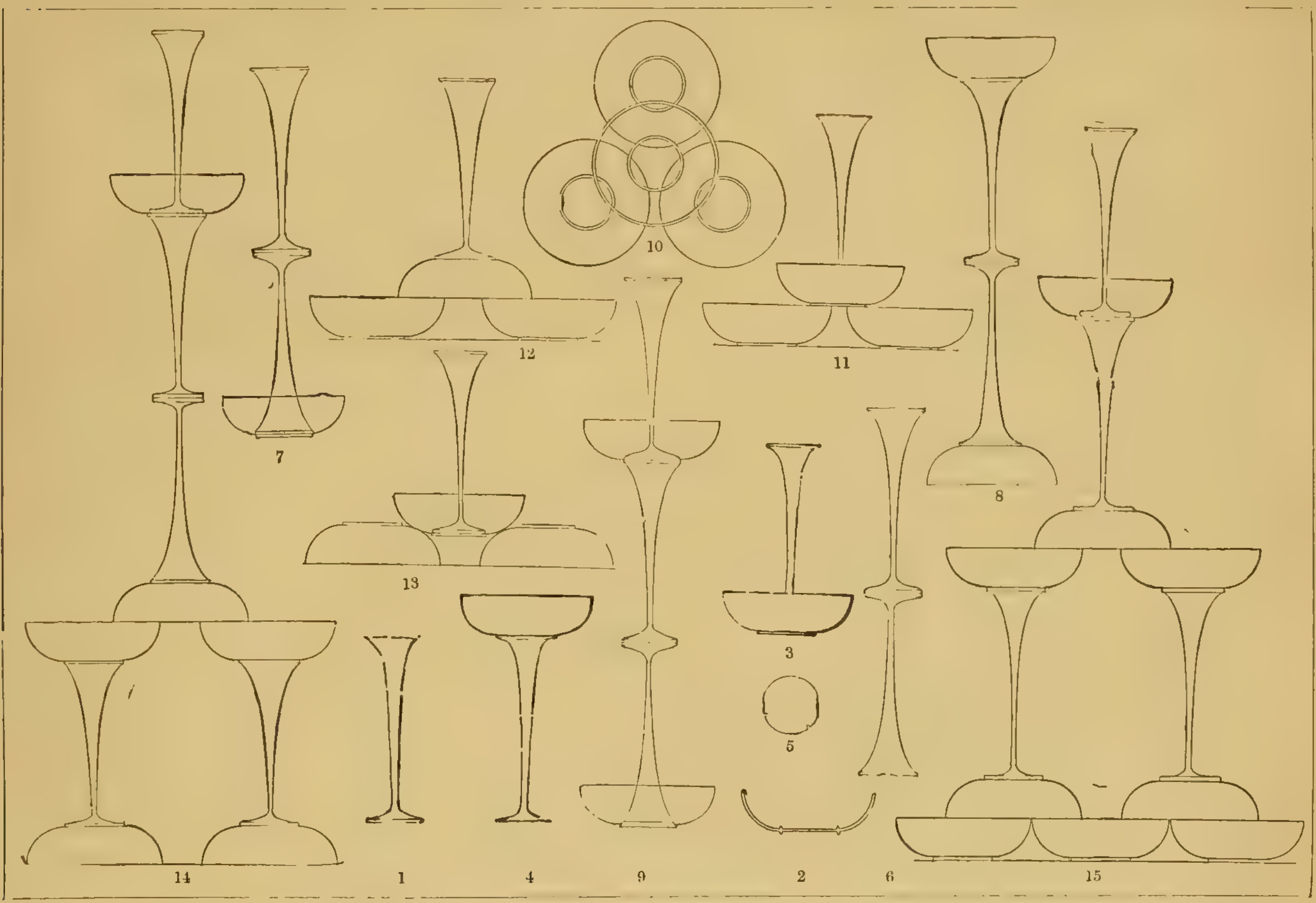
If you look over the collections of vases at the different glass shops in London and elsewhere, you cannot fail to remark how greatly the compound forms outnumber the simple forms, while of many of them it may truly be said that they are "wonderfully made." It has often been observed that different persons frequently regard the same object with very different views, and of nothing may this be more truly remarked than of a flower-vase. The buyer and the seller both regard it as a means to an end, but the "ends" of the two differ very widely. The object of the customer is to obtain something that will set his flowers off to advantage. The object of the manufacturer is to get as much money as possible out of the public; and to effect this he too often runs riot in beautiful forms and complicated combinations, which, however pleasing they may be to the eye of the critic, as works of art and ingenuity, are too often unsuitable for the purpose for which they were designed. Vases of this kind are unfortunately too numerous; and when asked to admire them, one feels more inclined to remark that they are fearfully as well as wonderfully made!

Although some of the compound forms are both pretty and useful, they all possess one drawback, which is, that, if the flowers at command happen to be unsuitable, or fail to be numerous enough to furnish it, the result is unsatisfactory.

These reflections induced me to think that it might be possible to have two or more forms of simple vases made, of such proportions that they might stand one upon another in different ways, and be built up to produce compound vases of various forms, to suit the quantity and character of the flowers to be arranged. With the view of testing the practicability of this notion, I have had a saucer and a trumpet-shaped vase made for me, and have tried them with flowers in many combinations. Though this is only a first attempt, and consequently must be open to many improvements, it has succeeded so well that it may be interesting to some of your readers if I explain the sizes of these two simple vases, and some of the ways in which combinations of them have been used.

The trumpet-shaped vase (fig. 1) is 10 inches high, and the diameter of both top and bottom of it are exactly 3 inches. The saucer (fig. 2) is 7 inches in diameter and 2 inches deep, and is furnished, both inside and outside, with a projecting rim of glass. By means of this rim, the trumpet vase is enabled to stand firmly either within the saucer (fig. 3), or beneath it (fig. 4).

In the rim of the foot of the trumpet vase three little nicks have been made at equal distances from each other, as shown at fig. 5. The object of this is to make a taller vase by putting one upon the other and fastening their feet together (fig. 6) by winding a piece of fine soft wire over the nicks and round the stems above and below the junction. A very useful form of vase for many kinds of flowers of light character is made by standing these united trumpet vases in the saucer (fig. 7).



When the selection of flowers to be arranged is limited to those of a drooping character, such as Fuchsias, the combination shown at fig. 8 will prove most suitable for the purpose. Fig 9 represents a useful combination where long Fern fronds or other good foliage is at command, to make the base of the arrangement broad in proportion to the height of the group. But when only short pieces of flower and foliage can be procured, it becomes necessary to form a base by putting three (fig. 10) or four of the saucers together, and placing another saucer on the top of them. If the base of the group is to be a pyramid of flowers, the saucers should be placed as in fig. 11. But if the supply of flowers is only sufficient to form a ring at the base of the group, then the saucer should be placed as at fig. 12.

It sometimes happens that the foliage which one desires to use for the base of a group is not only small in quantity, but of a flimsy character; and in such cases the arrangement of the saucers (as at fig. 13) gives desirable support to the foliage. Where a large and tall group of flowers is required for the centre of a table, the combination shown at fig. 8, with the addition of a trumpet vase in the upper saucer, may be placed upon a base formed of three or of four supports, which consist each of one trumpet vase and two saucers (as shown at fig. 14). Where a tall pyramid of flowers is required as a centre-piece for a sideboard or a buffet, or for the middle of a table in a drawing-room, some such arrangement as that indicated at fig. 15 will be found very convenient.

The foregoing are but a few amongst the numerous combinations for which these two simple forms of flower-vase are available.

W. Thomson.

Gardening for Women.—There is nothing better for wives and daughters, physically, than to have the care of a garden; a flower-pot, if nothing more. What is pleasanter than to spend a portion of every day in working among plants, watching their growth, and observing the opening of their flowers, from week to week, as the season advances? Then how much it adds to the enjoyment to know that your own hands have planted them and have pruned and trained them—this is a pleasure that requires neither great riches nor profound knowledge. The advantages which woman personally derives from stirring the soil and sniffing the morning air are freshness and beauty of cheek and brightness of eye, cheerfulness of temper, vigour of mind, and purity of heart.—*H. B. Stowe.*

THE KITCHEN GARDEN.

ASPARAGUS CULTURE.

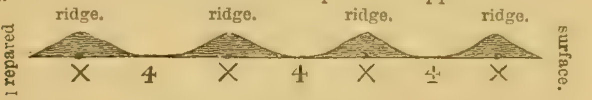
MR. NIVEN'S METHOD OF CULTURE.

[Mr. Niven has so long cultivated Asparagus with such success at Drumcondra, that we have thought it well to give his method of culture.]

Any time during the winter or spring choose any portion of the surface of your garden, with an open, south exposure; it matters not much what the soil may be on which the plantation is to be placed—provided the surface-water, in winter, does not stagnate on, or about it—but a soil of sandy quality is always to be preferred, where it can be obtained; but where not to be had, it is easy to add a few loads of sand in the surface preparation. Having fixed upon the space to be occupied, a layer of half-rotted leaves, or rotten hot-bed dung, may be spread over the whole, about 3 inches thick, to which might be added, where it can be obtained, a stratum of sea-weed. This, during the winter, should be slightly dug in to the surface, leaving the surface in narrow ridges, to receive the action of the weather. Or, it may be done immediately before planting in spring; the former time of preparation is, however, preferable. This process of surface management may be described under the following heads, viz.: Planting, summer treatment, winter treatment, forcing.

PLANTING.

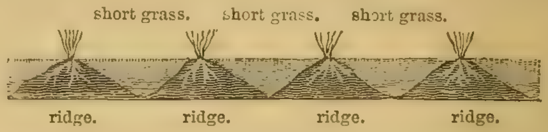
About the end of March or beginning of April (or even in May, when the young heads are 6 or 8 inches high), choose a dry day, and have the ridged-up surface neatly levelled down, after which, slightly dig the ground over again, which will thoroughly mix the surface with the manure and sand first applied; then tread over the whole, regularly, with the feet, and proceed to mark off, with the measuring rod, the places for the intended lines, at 4 feet apart; studying to run them as nearly north and south as possible, marking the place of each line with the corner of a draw-hoe, as for Peas. This being done all over the plot, at the distances described, have a quantity of compost ready, such as one-third rotten leaves, or rotted dung, one-third fresh soil (a hazel-coloured sandy loam from the corner of any Grass-field is best), and one-third river or sea-sand. If this has been for some time previously prepared, so much the better. Along each drill or line lay a small ridge of the said materials, so that, when ready for planting, a section of the surface of the plot will appear thus:—



Choose, if possible, good strong two-year-old plants, a quantity of which may always be kept in a reserve seed-bed for successional plantations in any odd corner of the garden. As it is of essential importance that the roots should be as little exposed as possible during planting to a drying atmosphere, it may be best to proceed thus:—carefully lift the plants, and cover them over in the barrow or basket with a little sand: proceed to set them on the little ridge or saddle prepared for them, as a man sits upon horseback, at about 6 inches apart from each other, having a person to follow with a barrowful of sand, which, with the spade, he lays over the roots and crowns, about 1 inch thick, observing to tread successively both sides of each line as he proceeds, with one foot, to firm the sand to the plants, so as to secure them from the action of the air, until the process of planting is concluded, when a second and final covering of about 4 inches of the compost is to be put over the ridge or lines, which is to be firmly trod to the line of plants as before. A small portion of the original surface between may then be thrown up with the spade, right and left, pressing neatly between every two lines as you proceed, and the process of planting, which is exceedingly simple, is finished. A plantation so made, containing from 140 to about 200 square yards, and requiring from 700 to 1,000 plants, or so, would be sufficient to supply Asparagus during the season for any ordinary family—the expense of which, apart from the plants, (which might be about 2s. 6d. per hundred) would be a mere trifle, particularly where sand and leaves or rotten dung can easily be had. I may remark that I much prefer the single line method of culture to beds, chiefly on account of the greater facility in the subsequent management, and because the plants derive more equal nutriment from the artificial surface that is gradually forming. The produce of two rows so treated I have found fully equal in quantity to any one bed with three lines besides being much superior in quality.

SUMMER TREATMENT.

This is an important matter in Asparagus culture. The plantation being finished, as has just been described, a good watering or two, should the weather be very dry, would, towards May, be advisable. In May, when the short Grass-mowing begins, a portion of it is to be brought to the Asparagus lines, and shaken in between, quite to the necks of the plants—say, so as to fill up the hollow spaces between nearly level, when a section of the plantation would, at this time, appear thus:—The object of this application, which must be renewed about once every month during the summer, will be at once evident, namely—the retention of moisture, and the production of vegetable food, and the slight fermentation that accompanies the decomposition greatly accelerates the growth of the plant: besides ultimately a bed of the purest vegetable matter is formed, into which, on both sides, the succulent roots of the Asparagus plants run freely. In this way, from the proximity of the roots to the surface, the genial influences of solar heat, and due atmospheric action, are enjoyed by the plant, without the least danger of its ever suffering from drought, in consequence of the non-evaporating nature of the vegetable mulching or covering alluded to, which receives and retains, as a sponge, the greater portion of the moisture that falls upon it, whereas, in the common Asparagus bed, the surface during the dry part of the year is almost completely exposed to the action of the sun and air, and, during any continuance of dry weather, may be seen to crack or rend in every direction, to the destruction of the roots in very many instances. After the shoots have begun to come up, we immediately begin to look regularly and carefully after the thinning. When the plants have pushed two or more heads each, the weakest are regularly cut away, as the stronger heads appear; so that by the end of the first season, not more than two, or at most three shoots, are left to grow to maturity on each plant. Proper attention to the thinning of Asparagus, in the first instance, immediately after planting, during the first and second years and afterwards, also in cutting for use, is of essential importance towards the future welfare of the plant. In consequence of proper attention not being paid to the subject of cutting, arising either from carelessness of the consequences, or from over-anxiety on the part of the gardener to send to table a good dish, much evil ensues to the plantation; for, frequently, instead of leaving a sufficient supply of strong shoots regularly over the bed, they are all cut away, and the weakest left, the inevitable result of which is a supply of comparatively small buds for the crop of the year following.



WINTER TREATMENT.

In November, or, as soon as the tops of the Asparagus become yellow, the whole should be cut over, and the soil along the crown of the ridge or line cleared away a little with the hand, when about 4 inches of sea or river sand should be laid along over the line of plants—this chiefly for the purpose of providing against the depredations of slugs in spring, and the clean, free progress of the heads the following season. In the spaces between the lines, a few barrow-loads of rotten dung, leaves, or sea-weed may be laid, and the whole should be neatly levelled with a three-pronged fork, stirring up the surface between the lines very slightly, as the levelling of the fresh material proceeds. No further care will be required till spring, when, just as the first heads begin to appear, the whole may be slightly stirred on the surface, and over the lines a little of the sand raked off. The process of mulching with short Grass, or, instead of it, other vegetable or decomposing animal matter, is to be followed up, as already described, from year to year. The second year some of the thinnings may be fit for use, but by no means should any of the strong heads be cut for that purpose, except where there are too many to one plant, as the patience and forbearance now exercised will be amply repaid by the produce next year, when the crop may be regularly cut for use. In gathering Asparagus, a habit prevails of cutting the heads a few inches below the surface; but for what useful purpose I am at a loss to conceive; inasmuch as the white or blanched part of the Grass is usually so hard and stringy as to be scarcely fit for use; whereas, by allowing the heads to grow the proper length above the surface, say about eight inches or so, they will not only still be compact, but the whole of the "Grass" will be tender and eatable.

FORCING ASPARAGUS.

Wherever the forcing of Asparagus is an object, a supply may be cheaply and readily obtained for the table, for at least six months of the year. With the view of making a fresh plantation every third or fourth year, according to the quantity required, a small stock of seedling plants should be kept ready for use when needed. In the seed-bed I prefer sowing rather thinly, on a light, well-prepared bed of fine earth, which will yield plants fit for transplanting the first year after sowing; but after two years this would be better still. A plantation, such as I have described, being formed every fourth year, a portion of the preceding one may be lifted for forcing every year, after the second comes into bearing; and so keep on with a regular rotation of sowing, planting, and forcing, upon a comparatively small surface of ground, which will be much improved by the alternate cropping and moving. Various methods of forcing are in practice. Perhaps no more simple or successful one is followed than that of placing the roots in the border of any early Vinery or Peach-house "at work;" where, by being placed closely together, the spaces between the roots filled up with fine mould, and covered about 2 inches over the crowns, the produce will be rapid and regular, in proportion as the house may be slowly or quickly forced. A succession may be kept up in this way where there exists several such forcing-houses, as it is only in the early stage of the forcing of such houses that Asparagus will succeed best when grown in them. In a similar way a good succession of Asparagus may be kept up from an exhausted tan-pit in which Pines have been grown the preceding season. Next to the above method, where houses do not exist, or where it may not be convenient so to occupy them, old Melon-frames answer equally well, worked by fresh linings of fermented dung, the old bed being well perforated below, to permit the heat to pass more regularly into it from the linings. Two or three light frames worked alternately in this way, observing to fill one as the other is fit for cutting, will afford a regular supply for any middling-sized family, about every second or third day. Asparagus will also do well on newly made-up beds; but great care must be taken to have the materials well fermented, and the bed properly sweetened previous to planting, else the roots may be seriously injured, if not quite destroyed, as no plant is more impatient of over-heat than Asparagus; on this account I would prefer forcing this vegetable in exhausted beds or pits, as the case might be. The more closely the surface of any bed can be packed with roots, the greater the produce will consequently be, provided that sufficient space is left for a little package of fine mould amongst them, which operation must be carefully done, finishing the whole by a covering over the crowns about 2 inches thick, and settling the whole in a day or so after, with a good watering, when the bed may be shut close up, until the heat begins to rise, and the heads make their appearance, when, for the sake of strengthening and giving them colour, a little air may be admitted, more or less, according to the state of the weather and the heat of the bed; as a simple criterion, the guard, or watch-stick, should never feel much beyond blood-heat. Of late years Asparagus has been forced to some extent in permanent beds, formed by side walls of brick-work, the sides and ends being pigeon-holed; between which walls fermented dung is put, and the beds on either side are forced. This method answers very well where a large command of materials and labour can be had; but upon the whole, I would greatly prefer the simple method of forcing just particularised, namely, an old Melon-bed, or in exhausted Pine pits.

CELERY AND PEAS.

These do well together thus:—Form 2 or 4-feet trenches at intervals of 4 or 6 feet apart, according to the plentifulness or otherwise of your ground; 2-feet trenches are for two rows of Celery, 4 feet for four rows. I prefer two only, at intervals of 4 feet. Mark out the spaces, then dung and dig the centre of the space between the trenches at least a spit deep; next dig out the trench to the depth of 2 feet, forming one-half of the 4-foot ridge with the earth; 6 inches of the richest manure should then be dug into the bottom of the trench, incorporating part of it with the soil and spreading at least 3 inches of neat manure along the bottom, leaving the surface pretty even and smooth and quite light. A second trench is then formed in the same manner. These two form an elevated ridge of mellow earth with the deeply stirred richly manured centre. As soon as the ridge is finished, sow a row of Ne Plus Ultra, Veitch's Perfection, William's King of the Marrows, or any of Laxton's last and best Peas along the middle of it. These do wonderfully well among all this mass of earth; and, as the light and air play upon them on all sides, they are mostly podded from base to summit, and continue long in bearing. Peas so placed are generally exceptionally clean and unusually prolific. A row of Lettuces may also be planted on each side of the Peas, and will soon come to perfection. The ridges should run nearly north and south; if east and west, the shade will prove too much for the Celery in the trenches, which I by no means intend to sacrifice for the Peas; on the contrary, the Peas are meant to be helpful to the Celery, by affording shelter and providing shade. The ridges should be made in March at the latest; the ground in the bottom of the trenches will then have time to sweeten and mellow before May and June, the time for planting early Celery. The Peas should also be a foot or two high by that time, and staked before planting. This will prevent any earth from falling on to the Celery in a young state. In gathering Peas or cutting Lettuces, a board or plank may be used, to prevent the sides of the trenches falling in. With these simple precautions the Peas will be helpful to the Celery and a clear gain to the cultivator. Before the earth is wanted for blanching, the Peas will be gone. And if, instead of shaving down the sides of the trenches, the crown of the ridges where the Peas grew is used for earthing up or blanching the Celery, the original level of the ground and a spit below it will soon be reached; and the second trench could be again manured and planted with a single or double line of Coleworts, Walcheren or other Broccoli, or autumn Cauliflowers. In this way the sides of the trench would be the last earth used in blanching, and the contracted area of the trench would help to draw the Celery up with tender crispness. I have not tried Mr. Simpson's paper collars, but intend to do so this season. Doubtless they will greatly facilitate the earthing up, especially in this bed system of culture. One reason why I got from four rows to two was the difficulty of getting the men or boys to keep the earth out of the hearts of the Celery in the earthing of it up. A clod in the eye of growth means a crooked, deformed stick, hardly fit for soup, and entirely unworthy of cheese or salad at taking up time. Crispness—almost as easily broken as a glass walking-stick—is the chief merit of good Celery. Among the best means of growing it thus are, a rich cool larder—a cellar never dry—partial shade, careful earthing up, and perfect blanching—all at once, after the desired size is reached.

D. T. Fish.

Virginian Poke or Pigeon-berry (Phytolacca decandra).—This is a branching herbaceous plant, which is found not only in the United States of America, but also in the Azores, North Africa, and China. It throws up vigorous sprouts in spring as large as one's finger, clothed with undeveloped leaves. These shoots, cut when young, and cooked like Asparagus, are so nice that one who has once partaken of them is sure to wish for more. Who will try what cultivation will do for such a plant? Those who are disposed to undertake its cultivation should get roots of it this autumn. Divide them and set them in rich soil, 3 feet apart each way. That the plant has a medicinal reputation need not deter any one from eating it: whatever there may be active about the young shoots is entirely destroyed in the cooking. In Europe Poke is frequently grown in gardens for its showy character when in fruit.—*American Agriculturist.*

WORK FOR THE WEEK.

PRIVATE GARDENS.

Conservatories.—Azaleas and Camellias that have done flowering should be removed, repotted, and placed in warmer houses. Seed-vessels of Rhododendrons, Azaleas, and other plants should be pinched off, so as to throw increased vigour into the young growth, unless it be necessary to save seed, and then only a moderate quantity ought to be kept for that purpose. Clematises, Passion-flowers, Honeysuckles, Hibbertias, Mandevillas, Acacias, and similar plants now making growth freely, must not be allowed to receive any check from cold draughts or from scanty supplies of water; and the young wood should be judiciously thinned at an early stage, rather than severely pruned when further advanced. Tie in the young shoots gracefully and loosely, yet neatly, and never permit them to twine round each other. All free-growing plants must receive liberal waterings, no matter whether they are in pots or in borders; but at the same time let saturation in all cases be avoided. Remove such plants as have done blooming, and fill their places with flowering plants from pits or greenhouses. Plants that are stationary, such as climbers and subjects planted out, unless they are in flower, are greatly benefited by daily syringings, and if green-fly, red spider, or other insects present themselves, a little tobacco water, or water in which flowers of sulphur have been mixed may be efficaciously employed. Washing with a sponge or soft rag and water, in which some soft soap has been dissolved, is the most effectual remedy for scale.

Greenhouse Plants.—Pot singly some of the best Lobelias into 4-inch pots for the decoration of the conservatory. Celosias, Gomphrena globosa, and the Amarantus salicifolius, should be shifted into larger pots than those they now occupy, as they increase in size; keep them in a moderately warm temperature and near the glass. Place plants of Astilbe japonica, for late blooming, at the base of walls facing the north. Stake Calceolarias and Pelargoniums if necessary, but if they can be grown stubbily enough to support themselves all the better; weak manure water is beneficial to them when coming into flower. Cut over Cinerarias and plant the roots in a rich border in the reserve garden, where they will soon emit shoots, that should be taken off and potted singly for use next year. Tulips, Hyacinths, Crocuses, Lily of the Valley, Astilbe japonica, and other plants that were forced into flower early in the season, should now be consigned to some shady border. Apply a mulching of loam and decayed manure in equal proportions to Lilies in pots, and, with the exception of such as are required for early flowering, keep them either out-of-doors or in cool frames. Shake unstarted Daturas out of their pots, repot them in good loam, leaf-mould, and some decayed manure, and place them in a warm pit for a time. Fuchsias, both hybrids and species, wintered under stages in greenhouses should be pruned, shaken out of the pots they now occupy, potted afresh, and kept in cool pits; they will come in usefully after early blooming ones. Keep early spring struck cuttings near the glass in warm houses, shifting them when necessary. Keep Coleuses near the light in an intermediate temperature, and repot and pinch in their shoots as may seem necessary. Seedlings and offsets of Cyperus alternifolius make fine table ornaments; good loam and leaf-mould, moderate heat, and plenty of water, suit them well, and 4-inch pots are quite large enough for them. Place old plants of Campanula pyramidalis out-of-doors, and keep seedlings of the same in a fair growing condition under glass. Keep up a succession of Mignonette in pots; a situation at the base of a wall shaded from the mid-day sun, and well sheltered, suits well established plants perfectly; but in the case of seed pots, and for some time after the young plants have made their appearance, they should be kept under glass. Give some manure water to Kalosanthes, and keep them in cool airy positions near the glass. Retain some specimens of Humea elegans for conservatory decoration. Place pots of Tropæolum tricolorum and others of that class under greenhouse stages, where they can be kept cool and dry. Hydrangeas for early blooming require a little extra heat, and such shoots as have no flower truss on them should be cut off and used for cuttings. Shift Statices as they require it. Introduce some plants of Vallota purpurea into heat, in order to induce early flowering. Plants of Sericographis Ghiesbreghtii, and Ianthemum miniatum should be cut back and placed in a warm moist temperature. Solanums, Ferdinandas, Abutilons, and other subtropical plants, from which the spring stock of cuttings has been procured, may now be placed in sheltered positions out-of-doors.

Kitchen Garden.—Crops generally, in this department, are backward this season. Early Peas are, however, now in flower. Cabbages have formed nice hearts, and early-planted Cos Lettuces are in good usable condition. A piece of matting tied around the most advanced of the Lettuces makes them heart better. Plant out successions of Lettuces as required, and sow a few seeds of the same on wall borders. Sow Cauliflowers for late autumn use at once; a few of the strongest of those raised under hand-lights will now be fit for use. Thin Parsnips to 9 inches or 10 inches apart in the rows; and thin Beet and Carrots a little, but not finally. A few Early Horn Carrots should be sown occasionally for drawing in a young state. Weed and thin Onions, and use the hoe freely between the rows. Plant out some of the earliest Brussels Sprouts, and sow some Savoys for late use. Prepare trenches for early Celery, about 4 feet or 5 feet apart, and transplant succession plants out of frames into beds or patches in a warm border. Sow a few Cardoons in rows where they are to remain. Thin plantations of Spinach, sow some for succession; and, where winter Spinach is exhausted, manure and dig the ground for Cabbage, Brussels Sprouts, Peas, &c. Sow Turnips in quantities according to the demand, and thin the later sowings. Small Salads should be sown weekly, and Radishes fortnightly. Remove flower-spikes from Rhubarb, unless they are required for seed. Sow some seeds of green Curled Endive for an early crop. Make a small sowing of Rampion on a rich shady border. Plant out Vegetable Marrows on light hotbeds, under hand-lights for a time, until the roots become established, and prepare pits in open quarters for others. If Tomatoes have been well hardened off, they may be planted at the base of walls facing the south; and, in the warmer portions of the kingdom, a warm border, or well-sheltered quarter of the garden, may be wholly devoted to their growth. Sow some French Beans for succession; and, if sufficiently advanced, earth up Potatoes. Those in frames should have free ventilation, and be sparingly watered between the rows.

Flower Garden.—Flower beds previously prepared must now be filled. Edgings of Sedums, Sempervivums, Echeverias, variegated Thyme, Polemonium cæruleum variegatum, Arabis albida and lucida variegata, Alyssum saxatile variegata, Ajuga reptans rubra, variegated Aubrietias, Ivies, Euonymuses, Loniceras, variegated forms of Poa trivialis and Dactylis glomerata, Dell's crimson Beet, Gnaphalium, Stachys, the variegated Cress and Meadow Sweet, Cerastiums, Viola cornuta and others, Gazanias, Santolinas, Salvia argentea, Saponaria calabrica, and many other plants, will doubtless long since have been planted, so as not to delay the planting out of the more tender plants. Pelargoniums of different sorts should be kept out of doors, under the shade of trees or under canvas screens, until finally planted out, which should be done in the warmest positions, first using the hardiest of the plants. Pelargoniums, Verbenas, Calceolarias, Centaureas, Cineraria maritima, Fuchsias (if not started in heat), Gazanias, Lobelias, dwarf Nasturtiums, &c., should be amongst the first planted out; Heliotropes, Perilla, &c., about the middle lot; and Iresines, Coleuses, Alternantheras, Amarantuses of the finer kinds, Musas, and other subtropical plants, should be left until the last—indeed, it is only a risk consigning these to the open ground sooner than the 1st of June. Stocks and Asters should be planted out at once, and, if a sowing be made on a border out of doors now, good late-flowering plants will be obtained therefrom. Tagetes and French and African Marigolds may likewise be finally planted; the former makes a good substitute for the yellow Calceolaria on a dry soil, and the latter do well in shady borders or under comparatively open trees. Everlastings of different sorts may now be turned out; if they have been pricked out at the base of a wall, there will be but little fear of them; but, if nursed in pits or frames, they will require more care. English Marigolds make good plants for growing under trees; and, as they are self-producing, they spring up everywhere where plants of the same kind previously existed. Mangles' variegated Pelargonium planted here and there in a bed of Verbena venosa makes a fine appearance. A carpet of blue Lobelia studded with good specimens of Polemonium cæruleum variegatum, or Centaurea ragusina, in pots and plunged in the soil, is also very effective; and a belting of the crimson Beet or Coleus Verschaffeltii alongside one of Centaurea ragusina or other white-leaved plant, makes an excellent contrast. Specimens of Cycas revoluta in pots, and plunged in the centre of round beds, and surrounded by dwarf and bright-coloured plants, are very attractive. The variegated and green-leaved Dracænas, Ficuses, Monsteras, Palms of different kinds, Ferns, particularly Asplenium Nidus avis, Acacia Lophantha, Castor-oil plants, Arabis, Wigandias, Ferdinandas, Musas, and others, make fine ornaments when employed as centres to beds, or as individual specimens plunged on lawns. In small beds a most interesting effect is produced by plunging in a belt near the edge some pots or pans, previously made up of dwarf plants, such as Sempervivums, Saxifrages, Alternantheras, &c., set as it were in a carpet of Selaginella Kraussiana. For back lines Dahlias, Hollyhocks, tall Ageratums, Salvia splendens and patens, Cannas, Acer Negundo variegatum, and Rhus glabra laciniata, are very suitable. For a carpet under such plants as Fuchsias, the variegated Acer Negundo, and other plants that cannot be planted so thickly as to cover the ground without injuring one another, the following may be used, viz:—Ajuga reptans rubra and variegata, Lamium maculatum aureum and album, Pyrethrum Tchiatchewi, Veronica repens, alpina, and incana, Viola cornuta, Mimuluses, Sedum glaucum, oppositifolium, acre, album, and elegans; Lysimachia nummularia, and L. n. aurea, &c.

SOCIETIES, EXHIBITIONS, &c.

CRYSTAL PALACE.

May 17th.

This, as usual, was a large and fine exhibition, and it was arranged with much taste and skill. Occurring, as it did, immediately after the great show at Regent's Park, it consisted largely of plants shown there. Full descriptions of many of the subjects exhibited on this occasion are, therefore, unnecessary.

Stove and Greenhouse Plants.—Here, as at Regent's Park, Mr. Baines was first, in the class of twelve plants, with magnificent specimens; and the second prize group came from Mr. Chapman; Mr. Morse, Epsom, and Mr. G. Wheeler were the other competitors in this class. In the nurserymen's class, Messrs. Jackson & Son, Kingston, were first with a splendid collection, in which was a plant of Imantophyllum miniatum, bearing twenty good flower-spikes; also a large plant of Acrophyllum venosum. Mr. Wm. Cutbush, Barnet, who was second, had a fine medium-sized plant of Gompholobium polymorphum splendens. In the amateurs' class for nine plants, Mr. B. Peed, St. John's Lodge, Lower Norwood, was first. Amongst his plants were fine examples of Epacris miniata splendens and Stephanotis floribunda. In Mr. Ward's group, which was second, was, perhaps, the finest plant of Statice profusa ever shown; it was some 5 feet through, and one mass of flowers. For six fine-foliaged plants, Mr. Baines was first, with Cordyline indivisa, Dasylirion acrostichum, a fine specimen of Theophrasta imperialis, Croton pictum, a magnificent example of Sarracenia flava, with very large and perfect pitchers, and another species of Sarracenia with as tall-growing leaves as the other, but with much narrower pitchers. Mr. B. S. Williams, Upper Holloway, was second, with a grand plant of Cycas revoluta, a perfect specimen of Cordyline indivisa, Croton pictum, Chamærops humilis, Gleichenia Speluncæ, and Dasylirion plumosum. Mr. W. Foreman, Carlton House, Herne Hill, was third, with some fine Marantas, Cupania filicifolia, &c. Several groups of stove and greenhouse plants were arranged for effect, and in this class Mr. Foreman was also first; Mr. J. Fewell, Broad Green Lodge, Croydon, was second; Mr. Peed third, and Mr. Morse fourth.

Cape Heaths.—Of these there were many groups, in all respects excellent; but that from Messrs. Jackson & Son, which was unusually fine, obtained the first prize. It consisted of Erica depressa and E. depressa multiflora, both about three and a half feet through, and of other equally large and effective plants. Mr. Ward, Mr. Peed, and Mr. J. Wheeler were the other successful competitors.

Azaleas.—Of these the following are some of the best kinds, viz.:—Reine des Roses, bright rose; Madame A. Verschaffelt, violet rose; Louise Margottin, white striped; Flag of Truce, white; Reine des Fleurs, salmon and white; Hooibrinki, purple; William Bull, shaded red; and Marie Vervaene, white, striped with rose. The successful competitors were Messrs. Turner, Lane & Son, Jackson & Son, Dobson & Son, Wheeler, Peed, Herrington, Roach, and Chapman.

Orchids.—Of these some excellent plants were shown. Mr. Ward was first in the class of fifteen plants, with a superb example of Phalænopsis grandiflora, Odontoglossum Alexandræ, a splendid Dendrobium Devonianum, a good Odontoglossum Phalænopsis, a large plant of Oncidium ampliatum, &c. Mr. G. Wheeler, Regent's Park, was second. In the nurserymen's class, Mr. B. S. Williams was first, with a group containing a specimen of Cypripedium caudatum furnished with nineteen flowers, a good Aerides Fieldingii with two spikes, Saccolabium retusum with four flower-spikes, &c. Messrs. Jackson & Son, who had the second prize, exhibited splendid specimens of Dendrobium infundibulum, and others. In the class of six plants, Mr. J. Wheeler was first, and Mr. Peed second.

Pelargoniums.—Of these some good examples were exhibited, especially from Mr. Ward, of Leyton, whose finely-flowered specimens elicited universal admiration. Messrs. Dobson & Sons, and also Mr. James exhibited good groups of show and fancy kinds. Zonal and tricolor varieties were exhibited in excellent condition by Messrs. Carter & Co., and by Messrs. Downie, Laird, & Laing.

Roses.—These were large and beautifully flowered, the blooms being of good size, form, and colour. In the class of ten distinct sorts Mr. Turner was first with splendid specimens of Victor Verdier, Madame Victor Verdier, Juno (fine), Celine Forestier, Charles Lawson, Souvenir de la Malmaison, Paul Verdier, Vicomte Verdier, Souvenir d'un Ami, and Maréchal Vaillant. The same exhibitor was also first in the class of twenty Roses. Messrs. Paul & Son, Ellis, and James were the other successful exhibitors. Mr. J. Skinner, Westerham Hill, Kent, furnished a box of cut blooms of Maréchal Niel, each of which was from 6 inches to 7 inches across; Messrs. Lane had also interesting exhibitions of Roses.

Clematises.—Of these Mr. Noble exhibited a fine collection of early flowering sorts, and also several new seedlings of his own raising, to which we have already alluded. The same exhibitor took the first prize for six Clematises. Messrs. Downie, Laird, & Laing exhibited a fine pure white double-flowered sort named Lucie Lemoine.

Miscellaneous Subjects.—A collection of cut flowers of Tulips was contributed by Mr. Turner, and a group of fine herbaceous Calceolarias by Messrs. Dobson and Sons. Messrs. Downie, Laird, and Laing supplied an extensive group of plants, in which were a fine plant of Cocos Weddelliana, a nice specimen of Dieffenbachia Bowmanii, a pretty plant of Ficus dealbata, the graceful Pandanus ornatus, and a basketful of their excellent new bedding Pansy, called Blue King. Mr. B. S. Williams exhibited a group of Orchids, and other plants, including Colax jugosus, Cattleya Mendelli, Maranta Makoyana, Dracæna Fraseri and splendida, some fine Ferns, Palms, &c. A group of Palms, Ferns, and other stove and greenhouse plants was shown by Mr. J. Ley, Croydon; it contained a fine plant of Todea superba, crested Gymnogrammas, a good plant of Dieffenbachia Bausii, Dracæna regina, and others. Messrs. Dick Radcliffe and Co. showed charming specimens of Fern and other plant cases; and Mr. T. S. Ware, Tottenham, had a group of herbaceous plants. Messrs. J. Carter and Co. contributed a varied group of miscellaneous subjects, including Anæctochilus Ortgiesi, Lowii, and others; Davallia alpina, Peperoma resedæflora, Cephalotus follicularis, Selaginella lepidophylla, Caladium argyritis, Croton irregulare, Maranta Sieboldii, Japanese Maples, Echeveria pulverulenta, and several others. Rhododendron fragrantissimum was shown by Mr. Cotterell. Cut flowers of Pansies were shown in great variety by Messrs. Downie, Laird, and Laing, by Mr. James, and Mr. Ware. Mr. Wm. Thomson, of Penge, exhibited a dinner table set with glasses on the multiple principle, the effect of which was excellent; and Miss Hassard furnished another table prettily decorated. The same lady, and Miss Thomson likewise, contributed several coat-flowers and bouquets.

ROYAL HORTICULTURAL SOCIETY.

May 21st.

This, although not one of the large summer shows, was nevertheless, in some respects, equally interesting. Its chief features were Heaths, fine-foliaged plants, Pelargoniums, and contributions of a miscellaneous character.

Heaths.—These were remarkably fine, the specimens being large and well-flowered. Messrs. Jackson & Sons, Kingston, were first, with a splendid group of nine plants; and Mr. Ward, of Leyton, second, with equally good, though smaller plants. In other classes, Mr. Ward and Mr. J. Wheeler, Stamford Hill, and others, occupied prominent positions.

Pelargoniums.—These were wonderfully large and well-flowered. Mr. Ward was first in two classes for show kinds, the varieties being Maid of Honour, mauve, upper petals dark; Patroness, white, upper petals spotted with dark crimson; Pericles, blush; Rob Roy, fine; Warrior, a splendid scarlet velvety flower; Royal Albert, Atalanta, Alabama, and others. In the class of fancy Pelargoniums, Mr. James, Isleworth, was first, with half-a-dozen well-bloomed plants, consisting of Helen Beck, Princess Teck, Acme, Juliet, Lucy, and Fanny Gair. Mr. Weir, The Elms, Hampstead, also showed some good plants. Messrs. E. G. Henderson & Sons had some fine zonals, and Mr. Wm. Paul fine examples of tricolor and bicolor kinds.

Fine-foliaged Plants.—In the class for nine kinds, Mr. Baines was first, with admirable plants of Croton pictum and variegatum, Theophrasta imperialis, Dasylirion acrostichum, Rhopala corcovadensis, Cordyline indivisa, Yucca aloifolia variegata, and two splendid specimens of Sarracenias. Mr. Cole, of Ealing; and Mr. Foreman, Carlton House, Streatham, exhibited two good groups, for which they obtained prizes. In the nurserymen's class of nine plants, Mr. B. S. Williams was first, with excellent specimens of Gleichenia Speluncæ, Croton pictum, C. variegatum, Dasylirion plumosum, Yucca aloifolia variegata, Chamærops humilis, Cycas revoluta, and Cordyline indivisa; Mr. J. Burley, Hereford Road, Bayswater, also showed some good plants. For twenty fine-foliaged plants in pots not exceeding 12 inches in diameter, Mr. Bull, Chelsea, was first, with a superb collection, consisting of Zalacca Wagnerii, a curious Palm, with leaves 14 feet long; Macrozamia spiralis eburnea, Encephalartos regalis, E. cycadæfolius, E. villosus; Cycas revoluta; a splendid plant with fourteen leaves of Curculigo recurvata variegata, and C. r. striata; a nice specimen of Phormium Colensoi variegatum, a large plant of Todea superba, a good plant of Dracæna excelsa, and others. Mr. B. S. Williams was second, with a specimen of the graceful-looking Cocos Weddelliana, some of the leaves of which were 4 feet in length; good specimens of Pandanus Veitchii, Dracæna Chelsonii and Guilfoylei, Sphærogyne latifolia, Beaucarnea recurvata, and others. Messrs. W. Rollisson & Sons, Tooting, were third; conspicuous among their plants were Croton interruptum, variegated Ananassa, Dracæna porphyrophylla, Pandanus Vandermeershii and ornatus, and Alocasia Lowii.

Orchids.—An extremely fine group of these was contributed by Mr. W. Denning, gardener to Lord Londesborough; it contained two plants of Masdevallia Dennisonii, one of which had six and the other eleven brilliantly coloured flowers; also M. Harryana, a large Utricularia montana, with a profusion of white flowers; a specimen of Odontoglossum citrosmum roseum, with a fine closely-set flower-spike of pale rosy-lilac blooms; and a prettily-flowered specimen of O. niveum majus, and one of the lovely white O. pulchellum. In addition to these, the same exhibitor furnished a medium-sized plant of Cattleya Mossiæ with seven flower-spikes, C. Wagnerii with two beautiful white flowers, C. Keinckiana, C. Warneri; Dendrobium Schroderi, crystallinum, and Devonianum; well-flowered plants of Aerides virens and Lobbii, the white-flowered

Vanda Denisonii, the orange-red coloured Lælia cinnabarina, and a specimen of Oncidium altissimum with eight flower-spikes. Messrs. Osborn and Sons sent a pretty Bletia hyacinthoides; and from Mr. Richards, of Gunnersbury Park, came an admirable group of Orchids, comprising a dozen varieties of Odontoglossum Alexandræ, O. niveum, a superb variety of Dendrobium nobile, some pretty Masdevallias, and well-flowered plants of Camarotis purpurea. Messrs. Veitch and Sons sent a plant of Odontoglossum vexillarium with four flower-spikes with fully-expanded blooms, well-flowered plants of Cypripedium niveum and lævigatum, Lælia anceps, Dendrobium infundibulum, Oncidium bifolium, concolor, and others. A specimen of Oncidium Krameri was sent by Mr. Wood, Stamford Hill; and Orchis fusca and Ophrys anthropophora by Mr. Ware. Of Masdevallia Harryana, a fine specimen with six flowers was contributed by Mr. J. Mills, Rendlesham Hall, Suffolk.

Hardy Plants.—Of herbaceous plants in pots, Mr. R. Parker, Tooting, sent an admirable group, for which a first prize was awarded. It contained the pretty Iberis correæfolia, Phlox frondosa, the variegated variety of Hemerocallis Kwanso, Funkia elegans viridis variegata, Iris spectabilis, Centaurea montana, Adyseton montanum, Trollius napellifolius, Aubrietia purpurea grandiflora, and variegated Lily of the Valley. Mr. T. S. Ware was second, with another fine group; in addition to which he showed another group of other herbaceous plants, containing the yellow Columbine (Aquilegia aurea), Libertia ixioides fol. variegata, the scarlet-flowered Anisanthus splendens, Tulipa Breniana, and others. From John Luscombe, Esq., Combe Royal, South Devon, came a collection of remarkably fine cut flowers of Rhododendrons, gathered from plants growing in the open air. For these a cultural commendation was awarded, and the same exhibitor received a similar mark of distinction for shoots of two kinds of Embothrium, laden with red flowers, taken from trees 18 feet high and growing in the open air, and for shoots of Ilex latifolia in fruit and flower, and shoots of Eucalyptus montana taken from a tree growing in the open air and having a trunk some 6 feet in circumference. Of cut flowers of hardy trees and shrubs, some fine collections were shown. Mr. W. Earley, The Gardens, Valentines, Ilford, was first, with a most extensive collection, including Rhododendrons of different sorts, Lilacs, Chestnuts, Clematis montana, Guelder Roses, double-flowered Cherries, Ghent Azaleas, Skimmia japonica, different sorts of Broom, Cydonia japonica, Magnolias, Hawthorns, Jasminums, Laurustinus, Spiræa prunifolia, Berberries, hardy Daphnes, Bird Cherry, Menziesia polifolia, Loniceras, Cercis Siliquastrum, and several other commoner subjects. Mr. J. George, Putney Heath, was second, with a group of somewhat similar, though less numerous, flowers. Miss F. M. Barr, Mr. R. P. Barr, and Mr. T. J. Ware showed groups of named Narcissi. English and fancy Pansy flowers were sent by Mr. Ware.

The Davis Memorial Competition.—To Mr. Baines' excellent exhibition set up for the Davis prizes we have elsewhere alluded. Two years ago a seal was affixed around the necks of eight plants belonging to each of the intending competitors, the plants being then in 6-inch pots. Of these only the plants grown by Mr. Baines were exhibited; but they were models of skilful cultivation. Their dimensions were as follows, viz.:—Aphelexis macrantha rosea, 3 feet 6 inches through, and 2 feet high (a beautiful plant); Epacris Eclipse, 4 feet 3 inches through, and 3 feet 3 inches high (splendidly flowered); Boronia pinnata, 4 feet 6 inches through, and 3 feet 3 inches high (a neat and graceful plant); Ixora coccinea, 4 feet 10 inches through, and 3 feet 6 inches high (a superbly flowered specimen); Hedaroma tulipifera, 3 feet 3 inches through, and 2 feet 10 inches high (flowers finely coloured); Dipladenia amabilis, 3 feet 6 inches through, and 3 feet high (well flowered, fine); Bougainvillea glabra, 3 feet 6 inches through, and 3 feet 6 inches high (a very good plant); Clerodendron Balfourii, 5 feet through, and 4 feet high (extremely fine).

Miscellaneous Plants.—From Messrs. Osborn & Sons, Fulham, came a fine group of miscellaneous plants, in which was a pretty plant of the purple-flowered Bletia hyacinthina; also a well-flowered plant of Oncidium sphacelatum. Some fine plants of Anthurium Scherzerianum, a graceful little plant of Dæmonorops fissus, the pretty tricolor Fuchsia Sunray and several other flowering and fine-leaved plants. Messrs. Dobson & Sons supplied a group of herbaceous Calceolarias, with finely formed and well marked flowers. Several cut flowers of Roses were supplied by Messrs. Paul & Son, and a collection of the same, together with cut blooms of Rhododendrons and Zonal Pelargoniums, were supplied by Mr. Wm. Paul, Waltham Cross. Messrs. Veitch and Sons, Chelsea, sent a fine group of Japanese Maples, including the dark crimson, variegated, and green-leaved kinds, and also an extremely fine collection of Azaleas, the flowers of which were large, and of good form and colour. Messrs. Lane & Sons also exhibited a collection of Azaleas, and Mr. R. Dean, Ealing, sent examples of a pretty double Stock called Violette, and cut flowers of his double-flowered pyramidal one called Mauve Queen; Messrs. E. G. Henderson & Son furnished some very fine striped seedling Petunias. Rhododendrons in pots were shown by Mr. Rowe, Roehampton, and Mr. G. Wheeler, and a magnificent specimen of Cycas revoluta in a medium-sized pot was shown by Mr. T. Woodford, Eastwell Park, Ashford, Kent. This plant was some 8 feet in diameter, and densely furnished with healthy foliage, and in the centre was a fine head of inflorescence; a cultural commendation was given for it.

Fruit and Vegetables.—Some finely ripened fruit of Little Heath Melon was contributed by Mr. Munro, of Potter's Bar; this variety received a certificate last year, and this season it promises to sustain the good character it then received. Mr. Henderson, Thoresby Park, Notts, sent samples of Royal Ascot Melon, that were highly thought of. A dish of Pears and another of Apples were exhibited in an excellent state of preservation. Black Hamburgh Grapes, well coloured and ripened, were sent by Mr. Marcham, of Wentworth; and a fine bundle of Asparagus was contributed by Mr. T. Bray, Nynehead Court. Of Northampton Hero Broccoli, Messrs. Watts & Sons sent fine samples, and Mr. R. Dean furnished specimens of Knight's Protecting Broccoli. Large bunches of Banana fruits, and baskets of fruit of Passiflora quadrangularis and the Chinese Loquat, and canes of the Sugar Cane, all imported from Madeira, were exhibited by S. Mart & Co., 130, Oxford Street.

First-class Certificates.—These were awarded to the following:—

Tea-scented Rose Madame George Schwartz (Lane), a most excellent purplish red Rose, of strong growth, and powerfully tea-scented.

Gloxinia Mr. Haines (Veitch), a crimson-flowered sort, of great merit, with a violet-shaded throat.

Gloxinia Prince Leopold (Veitch), somewhat like the former.

Oncidium concolor (Veitch), a beautiful canary-yellow coloured flower.

Zonal Pelargonium Scarlet Gem (Smith), the flowers are of fine form and of an intense scarlet colour, with a conspicuous white eye.

Clematis Charles Noble (Noble), a splendid large-flowered dark violet-coloured early-flowering sort.

Clematis Elaine (Noble), a double-flowered, blue, early-flowering kind.

Clematis Mrs. Cholmondeley (Noble), a very large, pale, lilac-bloomed sort.

Clematis May Queen (Noble), a finely-formed, delicate blush flower.

Clematis Undine (Noble), a dark, purplish-violet, double-flowered sort.

Pelargonium Northern Star (E. G. Henderson), a fine golden bronze, with a very broad zone.

Pelargonium Admiral Inglefield (E. G. Henderson), a golden bronze, with a very broad, dark, and distinct zone.

Azalea indica, var. Madame Paul Deschryver (Veitch), a double-flowered carmine flower of great promise.

OBITUARY.

It is with much regret that we have to announce the death of Mr. Mitchell, of Piltdown, which took place last Saturday night. It appears that he was suddenly seized with a fit of apoplexy on Saturday afternoon, and, although medical aid was at once called in, and every remedial means applied that medical skill could suggest, he died in the course of a few hours. Mr. Mitchell was well known, not only in Sussex, but throughout England, as a most successful Rose grower. There have been few flower shows which he has not attended and at which he has not appeared among the chief prize takers. Being much respected by all who knew him, he leaves a wide circle to lament his loss.

COVENT GARDEN MARKET.

May 23rd.

Home-grown vegetables of excellent quality are plentiful, including spring Cauliflowers obtained from under hand-lights. Cherries, Apricots, Strawberries. Lettuces, Turnips, Artichokes, Carrots, and other produce imported from the Continent and Channel Islands, have also been abundant, and of good quality.

Prices of Fruits.—Apples, per doz., 2s. to 3s.; Apricots, 2s. to 3s. per doz.; Cobs, per lb., 2s. to 2s. 6d.; Cherries, per box, 3s. 6d. to 6s.; Gooseberries, per quart, 8d. to 1s.; Grapes, hothouse, per lb., 8s. to 15s.; Lemons, per 100, 6s. to 10s.; Oranges, per 100, 6s. to 12s.; Peaches, per doz., 18s. to 36s.; Pears, kitchen, per doz., 1s. to 3s.; dessert, per doz., 6s. to 18s.; Pine-Apples, per lb., 8s. to 12s.; Strawberries, per oz., 9d. to 1s. 6d.; Walnuts, per bushel, 15s. to 30s.; ditto, per 100, 2s. to 2s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 3s. to 6s.; French, 4s. to 12s.; Beans, Kidney, per 100, 1s. 6d. to 2s. 6d.; Beet, Red, per doz., 1s. to 3s.; Broccoli, each, 6d. to 9d.; Cabbage, per doz., 1s. 6d. to 2s.; Carrots, per bunch, young, 1s. 6d., old do., 8d.; Cauliflower, spring, per doz., 8s. to 12s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 2s. 6d. to 4s.; Cucumbers, each, 6d. to 2s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 2d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 8s. to 12s.; button, per quart, 1s.; Parsley, per doz. bunches, 6s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 3s. to 6s.; Potatoes, per bushel, 5s. to 10s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Savoys, per doz., 2s. to 3s.; Scorzonera, per bundle, 1s.; Shallots, per lb., 8d.; Spinach, per bushel, 3s. 6d. to 5s.; Turnips, old, per bunch, 6d., young do. 2s.

ANSWERS TO CORRESPONDENTS.

New Polyanthus (J. H. Maw).—It is evidently of the Cowslip race, and will therefore be called a Polyanthus in gardens. It is a fine thing.——Names of Plants (F. M.).—Enkianthus reticulatus.——(Salmoniceps.)—1 and 2, Sedum ebracteatum; 3, Saxifraga hypnoides, var. elongella; 4, S. hypnoides; 5, S. paniculata.——(Highfield.)—1, Prunus virginiana; 2, P. Padus. There is nothing remarkable in the variegated Sycamore leaf.——(A. G. H.).—Epacris heteronema.——(M. Ryan).—1, Pyrus pinnatifida; 2, Mespilus Smithii (grandiflora); 3, Pyrus sinaica; 4, Prunus Padus; 5, Cratægus Pyracantha; 6, C. punctata; 7, Eriobotrya japonica; 8, Euonymus japonicus argenteus; 9, Euonymus japonicus aureus; 10, Stachys lanata; 11, Gnaphalium margaritaceum.——Ivies (Anon).—Among your variegated Ivies there is nothing new.——Primroses (Anon).—An interesting sport. Green flowers, however, sometimes occur not only among Primroses, but also among Roses and Dahlias.——Azaleas (W. T. C.).—The leaves of some Azaleas always become marked like those you have sent; when young, the variegation is very apparent.——Variegated Leaves (J. M.).—If the variegation is constant, it is worth trying to preserve it.

The Ancient Employment of Flowers.—If Mr. Grindon will be good enough to consider that my remarks (see p. 328) were addressed to his statement, that in "the classical authors there is *no allusion* ever met with to a posy or nosegay," and not to his present assertion that "*there is no mention made of a bouquet*," I am sure that he will see that these are two different things.—W. M.

THE GARDEN.

> "This is an art
> Which does mend nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

LOW NIGHT TEMPERATURE FOR VINES.

It has often occurred to me that the night temperatures recommended for Vines during the early stages of forcing by most Grape growers, if not by all, were extravagantly high, compared with the temperatures of those countries where the Vine thrives naturally, so far as I have had an opportunity of judging of the probable night temperatures of those countries by the mean temperatures furnished respecting them. As a rule, a night temperature of 65° is recommended for the Black Hamburgh and other hardy sorts before they come into flower, and 70° when they come into flower, with a rise of 20° or 25° by means of sunheat. For Muscats, 5° are added at these stages, making the night temperature for them 70° or 75°, with a proportionate rise during the day. Now these night temperatures are actually higher than the mean temperatures of the month of May (about which time the Vines are in flower) in those countries where the finest varieties of the Grape arrive at the greatest perfection. Surely, in this country, where everything connected with the culture of the Vine is attended with great expense, especially in the way of fuel, and seeing it is acknowledged that fire-heat assistance is only a necessary evil, at all times to be dispensed with as far as possible in Grape-growing, it would be worth while to try if we could not succeed by treating the Vine to its natural temperature. A lower temperature for exotics might with reason be advocated in this country, where the nights are long and the days dull; but, except under particular circumstances, never a higher one than that of the country where the plants thrive naturally. Yet this is the case with the Vine, so far as I can make out, and your readers can satisfy themselves on the point by comparing the temperature of Vine-growing countries, from the time the Vines begin to grow till the fruit is set, with our artificial forcing temperatures up to the same period, as recommended by our eminent Grape-growers. It is of no use arguing that good Grapes have been produced by our present high-pressure system. I admit this, knowing that plants will thrive for a time under conditions widely different from what they are accustomed to in their natural habitats, but the end will be unsatisfactory. It is notorious, that lasting instances of successful Grape growing are the exception—in fact, uncommon. Successful exhibitors are continually coming to the front, and disappearing again after a brief period—the duration of their success perhaps depending a good deal upon the number of Vineries at their disposal, and which they can run through one by one in succession as the hey-day of their vigour wanes. There are doubtless various reasons for this state of things, but I am convinced that failure in a very great many cases is caused by unduly high and exhausting temperatures. An excessively high temperature is not good for plants under any circumstances, but when such is maintained by artificial means, such as hot-water pipes or flues, the evil is greatly increased. Physiologists tell us, and experience proves, that plants require rest as well as animals. They are at work when perspiration is carried on actively from their foliage under the light and heat of the sun, and they are at rest when perspiration ceases at night, in the absence of light and under a considerably reduced temperature, allowing the plants to recuperate after the day's work, and store up sap and energy for another day. This is what takes place under natural conditions; but what happens in a forcing house—a vinery for instance? During the day, under the combined influence of fire-heat and sun-heat, perspiration goes on at a rapid rate; at night comes a reduction of temperature, but not always a reduction of the perspiration. The outdoor thermometer is perhaps at 32°, or lower, but with the assistance of the pipes, so hot, may be, that they would burn the hand, the temperature of the vinery is maintained at the orthodox figures of 70° or 75°; the moisture which should have saturated the atmosphere of the house, and arrested the demand upon the foliage of the Vines, is streaming down the glass in a condensed form, and the leaves themselves are as dry as they were at noonday, when they ought to be gorged with sap and have some to spare. This working day and night goes on, and spider and thrips make their appearance to complete the destruction of the already debilitated foliage; the same happens the next year, and the next, and then comes the end, so far as good crops are concerned. Considerations of this kind have led me to doubt very much the propriety of a high night temperature for the Vine. For the last few years, therefore, I have adopted a considerably lower scale of temperature than is usual, preferring much to be guided by the state of the weather out-of-doors, and not being particular to a difference of 10° or 12° in the night temperature, if a subsidence during cold weather was deemed necessary. From experience gained in this way, and influenced, I must say, by the price of fuel, I was led to think that a lower temperature still might be adopted with safety and advantage, and so sufficiently confident was I of this that I subjected one Muscat house to the experiment, considering that if the Muscats withstood the ordeal, there could be no doubt about the more hardy varieties. Fire heat was first applied to this house on the 1st of March, by turning the heat on at six o'clock in the morning, and turning it off again at two in the afternoon; giving the Vines a day temperature of from 70° to 85°, according to the weather—the thermometer, as a rule, falling to 50° or 55° by dusk, and to 45° in the morning, sometimes to 40°. This treatment was continued till April 8th, by which time the bunches were well out and the shoots stopped. From this date till May 10th the heat was turned off at six p.m., being turned on at six a.m., as before, except in one instance, noted in the following table, and on two or three occasions between the 19th and 26th of April, when the heat was turned on again from nine till ten p.m. (one hour), as a precaution, the weather being cold at the time. The temperature of the vinery by nine or ten o'clock p.m. was generally a little above or below 60°, the pipes having cooled by that time; and the table here given shows the minimum temperature of the vinery from before the Vines came into flower till the berries were set.

TEMPERATURE OF MUSCAT VINERY.

(Recorded by a Negretti and Zambra's Self-Registering Thermometer.)

	Lowest night temperature. °		Lowest night temperature. °		Lowest night temperature. °
April 8	58*	April 19	51	April 30	55‡
,, 9	52†	,, 20	50	May 1	59§
,, 10	52	,, 21	52	,, 2	55
,, 11	54	,, 22	57	,, 3	55
,, 12	55	,, 23	51	,, 4	54
,, 13	55	,, 24	51	,, 5	52
,, 14	52	,, 25	51	,, 6	54‖
,, 15	57	,, 26	51	,, 7	55
,, 16	60	,, 27	52	,, 8	55¶
,, 17	57	,, 28	53	,, 9	55
,, 18	56	,, 29	55	,, 10	55**

The above table represents a night temperature nearly 20° lower than is considered essential for Muscats, and I may state that a better set of fruit could not be desired than we have. The foliage is healthy and of better texture than usual, and the wood unusually short-jointed and firm, running about six or seven joints to the foot. Probably a minimum of 45° might frequently have been reached without danger. This would have been risked, but a bed of leaves on the inside border prevented a lower temperature. Less than a barrow-load of coals was used after six o'clock p.m. during the thirty-three days, and I estimate that only about one-third of the coal was used that would have been necessary had the night temperature been kept to 70° and 75°, the usual figure for Muscats. The above table may be accepted, in every respect, as reliable, and I think disposes of the idea that a high night temperature is necessary for Muscats. More than this, we seem to have lost no time, for the crop is just as far advanced as it was this time last year, though started at the same date. Since May 10th the morning temperature has stood at about 60°, the heat having been turned off at ten p.m.

J. S.

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* Heat turned off at 8 p.m. † Heat turned off at 6 p.m. from this date. ‡ Raisin de Calabrica coming into flower. § Muscats ditto. ‖ In flower generally. ¶ Earliest bunches set. ** Greater portion of the crop set, and berries swelling.

NOTES OF THE WEEK.

—— One of the most beautiful sights conceivable is now to be seen at the well-known Salt-Hill Hotel, near Slough. It is a magnificent Wistaria in full bloom, covering the front of the hotel, and running round each end for some distance, making altogether a length of about 150 feet. It was planted against a strong iron support of the verandah, which support it has long since lifted bodily from the ground, and booken in pieces as easily as a man would break a lucifer match. A Laburnum grows against the house on one flank, and the contrast between the clusters of blue and yellow flowers is perfectly charming.

—— On the large trees at the south side of the church at Camden Town may now be seen an unusual development of Chlorococcum vulgare, which presents a very remarkable appearance. It was stated some time since by Mr. McNab, that this Lichen or Alga mostly occurs on the north side of trees, palings, &c., but on the trees at Camden Town it forms broad green streaks, which run straight up the tall stems at various points of the compass. Here, evidently, it has no preference for any particular aspect, the same tree frequently showing three or more distinct streaks all the way up, each at a wide horizontal angle with the others.

—— In the Botanic Garden at Cadiz, there is now growing a very large specimen of the Dragon tree (Dracæna Draco), having a stem over 16 feet high, and 13 feet in circumference at the base. From the top of the stem proceed three huge main branches, which give rise to innumerable smaller ramifications, and form a handsome head. Three other public gardens of the same city possess each a specimen nearly as large as the foregoing, and in the various public and private gardens there are numerous specimens of this tree, of smaller sizes, to be met with.

—— Mossy rocks are often used with good effect in ornamental grounds in America. Wherever a bed is raised considerably higher than the level of the garden, or a stump is used as a centre-piece, there is an opportunity for the display of taste in disposing the rocks around it. If the rocks can be picked up in the woods, with plenty of moss upon them, they are greatly to be preferred to bare stones. They should be more or less inserted in the earth, and have the appearance of being in their natural position. This effect is not always easy to produce; but it is least difficult with a raised bed where the rocks are inserted in the side of the hill. Over these trailing plants are allowed to run indiscriminately.

—— Several rare and interesting plants are now in bloom on the rockwork at Kew. Prominent among these are Anthemis Aizoon, a very pretty and distinct perennial species, with white flowers and silvery leaves, resembling those of an Achillea; Dracocephalum grandiflorum, a plant too seldom met with, having large deep blue flowers; and Cheiranthus arbuscula, a kind forming a neat little bush, about six inches high, and bearing lilac-purple coloured flowers. There is also a nicely established plant of Ramondia pyrenaica, just commencing to bloom, and among plants more common than the above, yet particularly attractive at the present time, are Lychnis Lagascæ, Dianthus glacialis, a species closely allied to the Alpine Pink, Houstonia cærulea, and other interesting plants.

—— The Royal National Tulip Show took place on Wednesday last in the Aston Lower Grounds, Birmingham. Though the season has not been favourable for Tulips, judging from the specimens exhibited, it would seem that, even in the most favourable season, a better collection could not possibly have been obtained. There were exhibitors from Lancashire, Derbyshire, Worcestershire, Staffordshire, and other counties famous for the cultivation of Tulips. Taking the flowers as a whole, we can safely say that for quality and form certain varieties have very seldom been equalled. The cultivators from Nottingham and Derby carried off the best prizes, and many exhibitors who have hitherto been first in the contest now gained simply fourth or fifth prizes. The various classes were well represented, especially those for single specimens in one class—namely, the Bizarres. There were nearly 200 flowers from which to select ten prizes.

—— Foreigners, evidently, do not think much of us as fruit-growers or market gardeners—that is, if they are all of the same opinion as M. H. Mertens, from whose recent Report to the Belgian Minister of the Interior on the state of horticulture in the neighbourhood of London we extract the following:—"Fruit-tree culture is in such a poor condition in England, that well-trained trees are seldom to be seen there. Any palmettes they have are formed without art or method, and frequently without any regard to vegetable physiology—a science which, with us, always goes hand-in-hand with the art of cultivating and pruning fruit-trees. Indeed, the palmette, single or double, is not much in fashion there, almost all the wall-trees being fan-trained. The pyramid is quite unknown, and their orchard trees are grown as tall standards. The market gardening of the English is quite on a par with their fruit-tree culture, as they grow hardly any vegetables except Seakale and Rhubarb—in which, however, they excel, and which they devour in immense quantities." (!)

—— Many of the flower-beds near Hyde Park Corner are now filled with a mixture of Mignonette and dwarf Stocks, the effect of which is as pretty as their odour is grateful.

—— M. Naudin, of Collioures (Eastern Pyrenees), has succeeded in cultivating Phœnix pusilla (commonly and erroneously known as P. farinifera) out-of-doors. This handsome Palm, which does not exceed 7 feet in height, has both flowered and borne fruit in M. Naudin's garden in the open air.

—— Messrs. Paul & Son's new Rhododendron garden at the Old Nurseries, Cheshunt, is now well worth inspection. It is of considerable extent, and is arranged in such a way as to be very effective, advantage having been taken of the inequality of the ground to have banks of Rhododendrons backed up by trees and shrubs of a larger growth.

—— The American Pomological Society intend to hold a great meeting in Boston on the 10th, 11th, and 12th of next September, in which all lovers of fruit are cordially invited to participate. As fruit culture is very extensively carried on in America, the meeting will doubtless be one of the highest importance and interest.

—— At a recent meeting of the Royal Horticultural Society, specimens of the hybrid Cytisus purpurascens, or (as it is now more commonly termed) Cytisus Adami, were exhibited, bearing on the same branches, in addition to its own peculiar flowers, the flowers also of each of its parents (Cytisus Laburnum and C. purpureus) very distinctly marked. This phenomenon, which has been noticed before, is interesting, chiefly as showing that the scion is undoubtedly influenced to some extent by the stock.

—— We learn from the *Revue Horticole* that M. Paillet, nurseryman at Chatenay-les-Sceaux (Seine), has lately received from America a singular variety of the Peach-tree. It is described as being a vigorous grower, with large leaves of a deep purple colour, with metallic reflections. The fruit is said to be of good size and quality, and, when ripe, of a uniform red colour over the entire surface of the skin.

—— The present damp, cool, and comparatively late season has considerably prolonged the beauty of our spring-flowering bedding plants. During the past three months the display at Belvoir has been unprecedented, and now, although quite as beautiful as ever, the beds are being broken up for the accommodation of their summer occupants. In Battersea Park some of the beds are still untouched and extremely gay, Daisies, Pansies, and Violas being now at their best, and Collinsias only just coming into flower.

—— The Government of Adelaide (South Australia) have organised an expedition for the purpose of exploring the as yet unknown region between Central Mount Stuart and the western coast. The party will be under the command of Major Warburton, and Mr. Berry will accompany it as botanical collector. It is intended to start from Beltana, and to follow the same route which was taken by the unfortunate Leichardt. Three camels will be specially attached to the expedition for the transport of botanical specimens.

—— Amongst notable trees, the Peuplier de l'Arquebuse, now standing in the Botanic Garden at Dijon, is worthy of record. This venerable Poplar was planted about A.D. 1400, and is consequently now about 470 years old. It is 100 feet high and 49 feet in circumference at its base. The age and dimensions of this tree are quite extraordinary, as the average duration of Poplar life seldom exceeds two centuries, and a Poplar trunk of even half the dimensions of the above is seldom seen.

—— We learn, from the current number of the Portuguese *Jornal de Horticultura Pratica*, that Senor Edmond Goeze has been commissioned to proceed to England, in order to enquire into the circumstances under which the numerous and valuable collections of African plants, made by the late Dr. Welwitsch, were disposed of in his will. Our readers will, perhaps, remember that Dr. Welwitsch bequeathed a large portion of his collections to the Portuguese nation, by whom he was formerly employed as a botanical collector; but it appears that the Portuguese Government consider themselves entitled to the whole, on the plea that the collections were formed by Dr. Welwitsch while in their service. Senor Goeze purposes remaining about two months in England, during which time he will take possession of Dr. Welwitsch's bequest to the Portuguese, and also make a further collection of dried plants for the Herbarium of the new Botanic Gardens of the Polytechnic School. After this he will proceed, with the same object, to Paris, Berlin, and Vienna. The *Jornal* also states that Senor Goeze has been commissioned to purchase in England the stoves and other heating apparatus for the new Botanic Gardens.

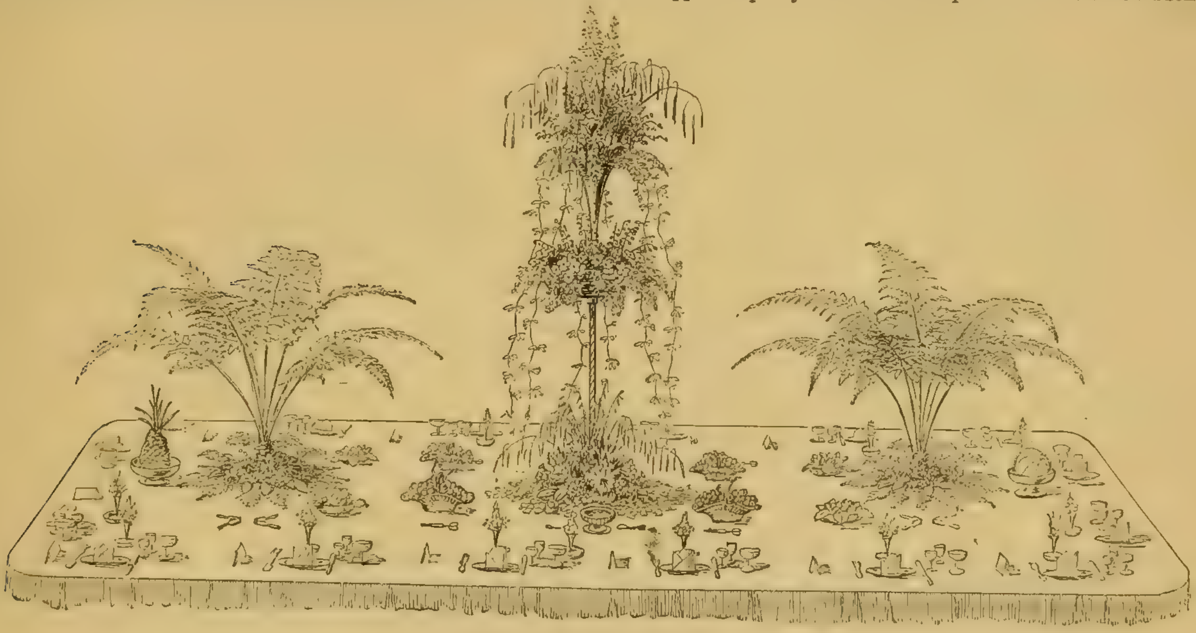
THE GARDEN IN THE HOUSE.

DINNER-TABLE DECORATION.

There is scarcely an entertainment of any importance given throughout the season that we are not informed, "The floral arrangements were supplied by Messrs. So-and-So"—a fact which shows that flowers on the dinner-table appear to be coming more and more into fashion every day, and certainly nothing tends so much to give a dinner-table a handsome and well-furnished appearance as good flowers, if well arranged; but there lies the difficulty. The arrangement must be good, for, if that is not done with taste, the table will be spoiled by the flowers, instead of being adorned by them. This happens sometimes from want of taste in the blending of colours, but oftener from the quantity of flowers used. Many are under the impression that the more flowers that can be packed into a stand, the richer and handsomer it will look; but that is a mistake; for, by packing, it acquires a heavy appearance, which no amount of dressing up with Ferns or Grasses can obviate, and the consequence is that too many of the latter are often used to make the stand look light. My own idea of the perfection of a stand is its light appearance, and to effect this too many flowers should not be used. Just place them so as to let each one stand out distinctly by itself, never allowing it to crush up against its neighbour. I also always like to see very light flowers used in the trumpet, and here too many Grasses and Ferns can hardly be employed. Another fault which is constantly observable in floral arrangements is the blocking up of the view across the table. This should always be avoided as much as possible, as nothing interferes more with the comfort of those seated at a table than a clumsy stand of flowers or a pot-plant set so as to intercept the view, and shut them off from conversing with their friends opposite.

The accompanying illustration is a facsimile of that to which was awarded the first prize at the dinner-table exhibition, which took place in the Royal Horticultural Society's Garden at South Kensington, on May 15th, 1872, except that the table here represented is laid for sixteen instead of for twenty persons, as at South Kensington, and there were two Parian statues on that table which have been omitted in the engraving. The centre-piece was arranged thus:—In the bottom dish were scarlet Cactus blooms and trusses of Stephanotis placed alternately, with spikes of Astilbe (Spiræa) japonica and Cyperus alternifolius; around the edge, resting on the table-cloth, were fronds of Adiantum Farleyense and of Pteris serrulata alternately. In the top dish were pale-flowered zonal Pelargoniums, Lily of the Valley, and Maidenhair Fern. In the trumpet, Astilbe (Spiræa) japonica, Rhodanthe Manglesii, small-flowered scarlet and pale pink Begonias, Maidenhair Fern, long-trailing sprays of Lygodium, and a few spikes of wild Grass. The plants put through the table were Ferns (Pteris tremula), round the base of which were arranged trusses of Stephanotis, white Rhodanthe, Maidenhair Fern, and Lastrea Filix-Mas. The baskets were of glass and contained Grapes, two of white and two of black; the four oval glass dishes had in them Cherries and Strawberries, the top and bottom a Melon and Pine. The small circular stands between the baskets were sugar dishes. In front of each person is one of the new shaped finger glasses, each containing a button-hole bouquet or coat flower; and on the water double scarlet Pelargoniums, pips and small leaves of sweet-scented Geranium Lady Plymouth.

A. H.



Prize Dinner-table Decoration.

Window Flowers.—When windows are filled with plants selected according to taste, and these are potted into moderately large pots, sufficient to last them through the growing season, they will require little other attention besides watering, which must be regularly and constantly done. Plants thus circumstanced, from the position they occupy, are extremely liable to suffer from drought, if there is the least neglect in administering their supply of water. This applies equally to all kinds of plants cultivated in such situations. In order to protect them from injury, in consequence of the powerful rays of the sun striking directly on the sides of the pots, often very thin, and forming a mere shell round the roots, it is advantageous to set the pots containing the plants within others just large enough to contain them: the double sides, together with the small open cavity all round between the two, prevent the evil to a very great extent; and it may be still further prevented by choosing the exterior pot still larger, and filling the cavity between the two with moss, which should be kept damp.—D.

Novelties in Coat Flowers.—Permit me to commend to your correspondent "A. H.," and to all whom it may concern, Narcissus gracilis, the most elegant of all the genus, as an exceedingly pretty coat flower; like the whisky of an Irish friend, it is best when mixed with nothing; a black coat sets it off better than any foliage, while its delicate scent, graceful form, pale primrose colour, and the free arrangement of its cluster of five blooms, leave nothing further to be desired. As a contrast to this, let me mention Aponogeton distachyon, a Cape of Good Hope aquatic, that has been in flower all through the late mild winter, and which has not been injured in the least by the fall of the thermometer to 22° on two consecutive nights after warm weather during the last week in April. It is a thick fleshy flower, of very peculiar form, pure white, with black dots inside, these dots being the unopened anthers. This with a spray of Maidenhair Fern makes a capital "button-hole," and may be still further commended for its "staying" powers.—W. T. P.

THE GARDEN GUIDE.

SUFFOLK.

SHRUBLAND PARK.

SHRUBLAND, with its noble park and extensive woods, occupies a commanding position, as will be seen by our illustrations of it in THE GARDEN, Vol I., p. 350. Attached to the mansion is a noble span-roofed conservatory. Then follow balcony gardens supported by noble flights of steps and banks of shrubs, terminating in what are termed the panel gardens. Stretching away to the left, along a magnificent green promenade, is a succession of gardens in all styles—the Chinese, the English, the geometrical, the Swiss cottage and gardens, the maze, the subtropical, the Rosery, the conservative wall, the mixed irregular, and, towards the lake, the shrub garden and specimen trees, and glades of turf, the wild garden, rockery, &c. At the back of the architectural boundary of the panel garden are the French garden, ribbon borders, rough banks of roots, stones, and wild shrubs and flowers, a noble sweep of turf, a row of the finest sweet or Spanish Chestnuts in England, and so back to the mansion. On returning at the other end of the grounds, by the Swiss cottage, we pass through rock-work, hear the tinkle of running water, pass the end of the looking-glass garden, and so wind up a smooth lawn to the conservatory, close by which we find one of the most unique ribbon-borders in the kingdom, composed of lines of different heights of Smith's or Shrubland Scarlet Pelargonium, with its enormous strength and glowing trusses. The finest features at Shrubland are the site of the house, commanding views of the whole country to the south and west for miles; the house itself being in the castellated style; the beautiful lawn, sloping from it on the garden side, broken rather than occupied by the balcony garden; the fine steps, a hanging wood, cutting the upper terrace, &c., from the under series of gardens, and hiding them at all points, except from the top of the steps; the distant lake, recently formed; and the immense variety, as well as extent, of the series of flower gardens. The variety, in fact, sustains the interest, and one never wearies of them. The park is also beautifully undulated and well wooded, especially with old Spanish Chestnuts and Oaks. There are no Conifers of any great age or size at Shrubland. The kitchen garden is entirely hidden from the house, and is against the stables, which are near the house, but which are planted out. It is large and well furnished. Pines, Grapes, Melons, and orchard-house fruit of all kinds are well grown at Shrubland, and there is a large collection of plants in the different houses. Flower gardening, however, constitutes its chief feature, though fruits and vegetables, alike in-doors and out, are skilfully and successfully cultivated.—Proprietor, Admiral Sir George Brooke, Bart.; gardener Mr. Blair. Distance from Ipswich five miles.

HARDWICKE HOUSE.

This handsome building, in the Elizabethan style, stands in a commanding position in a well-wooded park, embosomed in plantations, and surrounded by extensive pleasure-grounds and shrubberies. The late proprietor, Sir Thomas Geary Cullum, was a great planter and liberal patron of horticulture, and he and the present proprietress, Lady Cullum, devoted their leisure time to the furnishing and adornment of the estate. Thriving trees, shrubs, and plantations abound in all directions, and prove by their goodly dimensions and healthy state what may be done in the course of half a century to secure shelter and to create beauty by skilful planting. There are also a few fine old trees on the park and on different portions of the estate. An avenue of very tall Limes, and two of perhaps the finest oriental Planes in the kingdom may also be seen at Hawsted Place. Hardwicke House, from its elevated position, commands a fine view of Bury St. Edmunds, while a broad avenue of young Limes that runs into an old one of Sycamore, has the grand abbey gate as its central object in the far distance. The grounds are very extensive, consisting of a large geometrical flower garden skirted with Roses on tall arches, ribbon borders, broad lawns adorned with fine Cypresses, Cedars of Lebanon, Purple Beech, a grand Wych and other Elms; broad terrace walks, one with elegant blue and golden gates at each end, another with handsome stone seats; the Yew walk—a dense wall of Yew on each side, terminating with a vase and a far reaching view of the distant country. Then follow mostly new grounds of several acres in extent, consisting of Rosery, shrubberies, and raised herbaceous border or spring border garden, called My Lady's Garden. This portion of the grounds commands fine views of the undulations of the park and distant scenery. Passing through a shrubbery the Pinetum is reached, containing specimens of many fine Conifers. Turning to the right, we enter a dell or Fernery, formed of blocks mostly, as stone is scarce in East Anglia. This is of considerable extent and interest, abounding in walks and raised banks, and having a longish tunnel joining different portions together. Here spring flowers, beginning with the Golden Aconite, followed by the Snowdrop, Violets, Forget-me-Nots, and Primroses, reign till the Ferns and other plants succeed them. The blocks are mostly furnished with Ivy and have a fine effect. Groups of Rhododendrons, which do well in the loam, dense masses of shrubs, Hollies, Laurels, Yew, and Box abound in all directions near the pleasure-ground walks; while at different points masses of Pampas Grass, Daffodils, and Rhododendrons are thrown in, while Primroses and Violets fill up with beauty and sweetness each vacant place; and so till the kitchen garden is reached. This is small, and ornamental as well as useful is written on its arrangements. Each crop has its separate block of land, the walks are lined with pyramidal Apple, Pear, and Plum trees, with a second bordering of cordons—single, double, diamonded, or spiral. Again, between these, pyramidal Roses rise, and all around the outside of the garden runs a double line of beauty, composed of flowering Thrift and the snowy white Saxifraga hypnoides. In front of the pretty cottage for the gardener, which stands in the centre of the kitchen garden, a row of standard Roses lines the main walks, backed by Sweet Peas and fronted with flowers; and yet but little ground is devoted to beauty, and the crops are crowded upon each other, to reap a maximum amount of crisp, sweet produce from a minimum of space. The glass houses are extensive, and reach from the conservatory attached to the house, in a continuous range, for several hundred yards. They are well furnished with Vines, Peaches, Figs, and plants; another block of houses is devoted to Pelargoniums stove plants, Azaleas, Camellias, Melons, Cucumbers, &c.—Proprietress, Lady Cullum; gardener, Mr. D. T. Fish. Distance from Bury St. Edmunds, 2½ miles.

ICKWORTH PARK.

The park at Ickworth is one of the finest in the kingdom; it is eleven miles round, contains nearly 2,000 acres, and is stocked with from 700 to 800 head of deer. It is richly wooded, and charmingly undulated. Here and there are some old Oak and other trees; but most of the timber is modern. The mansion is as magnificent as the park; it consists of a central dome—which can be seen for miles in all directions—and two wings, the whole extending 625 feet. The dome is 105 feet high, and its diameters (it is slightly oval) are 120 by 106 feet. The foundations of Ickworth were laid in 1792, by the Marquis of Bristol, who was also Bishop of Derry, and to whom a splendid monument, raised by the inhabitants of his diocese, forms an important feature in the park. At one end of the mansion there is a noble conservatory, and at the other a fine orangery furnished with a nice collection of trees in tubs. Around the base of the mansion are beds of shrubs skirted with flowers; then follow a narrow walk and a sloping bank of turf; we now go on to a lower level, or plateau, on which are groups of flower-beds or gardens furnished with bedding plants in the usual manner. Then come fine masses of shrubs broken with Cypresses and spiral trees, with groups of flower-beds amongst them, the whole encircled by a raised walk that skirts the pleasure-grounds and commands magnificent views of the far-reaching park in all directions. The effect of the garden and shrubs would be better were the shrubbery nearer the house, and the walks wider. The flower-beds, too, should be fewer and more massive. The old pleasure-grounds sweep away amid charming walks and fine specimens for miles, and command fine views of the park. The kitchen garden lies in a hollow, and contains about 8 acres of irregularly lying ground, surrounded and divided by fine walls. There are three fine ranges of Vineries, distinguished by the excellency of their produce, a fine new Peach-house, and a group of plant-houses by Beard, which answer well for the forcing and growth of flowers. There is also a large lake well furnished with fish, and the present noble proprietor has formed another and much more extensive one abounding with wild fowl.—Proprietor, the Marquis of Bristol; gardener, Mr. Robert Squibbs. Distance from Bury St. Edmunds, between three and four miles.

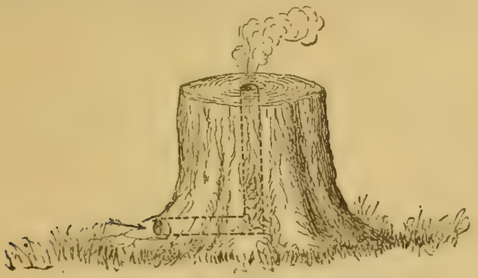
CULFORD HALL.

This stands on one side of an extensive and finely-wooded park, near a large sheet of water. The gardens around the house are small, and terminated by a church, which has been rebuilt in a beautiful and substantial manner by the present proprietor. The lawn contains some striking Irish Yews and Pinuses, and a flower garden in front of a new conservatory and fernery. The latter has recently been extended, water has been led over its rocks, so as to fall into a pool below, and a flight of steps enables the spectator to look down upon it. Passing along well-kept walks, past the churchyard, through a shrubbery and small out-of-door fernery, the noble kitchen garden is reached. This consists of eight or ten acres, in two divisions, surrounded with fine walls. The whole of the vegetable quarters are shut in from the main walks by a turf verge, and dense Yew hedges, which are clipped twice a year. This gives the garden a dressy appearance, and the Yew and Grass contrast admirably with the white, glistening gravel of the walks. The main range of glass houses stretches right across the garden on a raised terrace, supported by a low retaining wall crowned with vases. In the centre of the range stands the gardener's cottage, and directly in front of it, and extending some way beyond, a large space is cut out of the kitchen garden, right across, and, shut out by the Yew hedges, laid down in Grass, and formed into a flower garden. The beds are small —the design elegant, and the effect is unique and grand. In addition to this, the whole of the raised platform devoted to the Vine borders, &c., is laid out in ribbon-borders, carpet bedding masses, &c., while sundry other borders are given up to seedling Pelargoniums, herbaceous plants, annuals, &c. The kitchen garden is thus centred and fringed with flowers. The glass is most extensive, consisting of Vineries, Orchard houses (immense in size), Fig houses, Peach houses, Melon houses, pits and frames, Strawberry houses, &c., and the quantity of fruit grown is very great, and its quality all that can be desired. A glass roof with a canvas front is also used for the growth of Apricots on walls, and answers admirably. A fine collection of Azaleas and the usual stove and greenhouse plants for furnishing and cutting are grown, and, as everybody knows, Culford has been the birthplace of Mrs. Pollock and of most of the best tricolor Pelargoniums now in cultivation.—Proprietor, the Rev. E. R. Benyon; gardener, Mr. Peter Grieve. Distance from Bury St. Edmunds, four miles.

THE ARBORETUM.

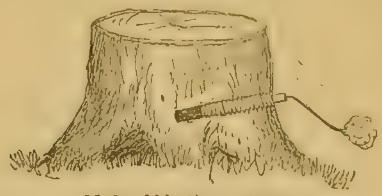
BLASTING AND BURNING LOGS AND STUMPS.

The difficulty of burning stumps lies in their solidity. It is by no means easy to burn a solid stump entirely, but, of the various plans which have been devised for this purpose, such as saturating the stump with petroleum, saltpetre, &c., the following cheap and easy method, as described in the *American Agriculturist*, appears by far the best, and is much employed in America, where the destruction of innumerable stumps is a necessity of civilisation. With a 2-inch auger, bore a vertical hole in the centre of the stump from the top to the bottom. Then in the side of the stump, close to the ground, bore a horizontal hole towards the centre, so as to open into the bottom of the vertical hole. Drop some fire down the vertical hole into the centre of the stump. The draught of air entering by the horizontal hole (as shown by the arrow) will, like the draught of a chimney, maintain the combustion of the fire in the centre, which gradually spreads, and ultimately burns away the stump to a mere shell, which is readily knocked to pieces. It is stated that many stumps thus burned have had a great portion of the large roots consumed far into the ground.

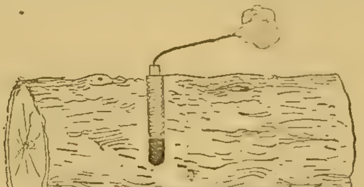

American method of burning stumps.

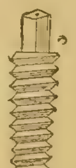
Blasting, however, is a much more expeditious mode of clearing away stumps, and the time thus saved may well compensate for the trifling expense of the powder, &c. If a little powder is used, and the stumps skilfully broken up into fragments or split, they may be burned without difficulty, and the fire will penetrate through the crevices opened by the force of the powder and eat out the roots until they are beyond the reach of the plough. There only needs to be care exercised to bore the hole in the right place, and not use too much powder. The hole should be an inch and a half in diameter, and should penetrate to the centre of the stump. It should not be too low down, lest the bottom should blow out, and the force be expended in shattering the ground instead of the stump. Judgment should be used in so selecting the spot to put the powder that there may be an equal thickness of wood all around it, in which case the stump will be split into four or five equal pieces, generally into as many as there are large roots attached to it. If this is properly done, and the stump is sound, some very good "knees" are sometimes got out, which are saleable for various purposes, more especially for ship or boat building.

The following is one of the best ways of putting in the powder:—For a large stump of 2 or 3 feet thick, about 3 inches depth of coarse blasting powder, the grains of which should be as large as Peas, in an inch-and-a-half hole, would be sufficient. About 18 inches of fuse should be left outside of the hole. The end of the fuse should be put into the centre of the powder, and dried sand then poured into the hole until it is full; or the steel screw-plug described below may be used instead of the sand. A coarse iron wire should be thrust into the sand several times, to consolidate it and pack it closely around the fuse. The outside end of the fuse should then be split with a knife for half an inch, and shredded somewhat, then lighted with a match. It will require over a minute for the fire to reach the powder, during which time a place of safety should be sought. One may stand 100 feet away with safety, if too much powder is not used. A proper quantity should leave the stump in such a condition that the fragments may be prized out with a bar, or drawn out by a horse. Experience alone can teach what is a proper quantity to use.


Mode of blasting a stump.

For splitting logs by blasting, an ingenious method is thus described by Mr. T. J. Kane, of Illinois:—"Having many fence-posts to split out of large white Swamp and Burr Oak logs of a roughness and knottiness that made blasting necessary, I went to a machinist and ordered a steel screw made about 3 inches long, tapering so as to tightly fill an inch-and-a-quarter hole, with a small hole through its centre, to admit of a fuse and an added inch square on top to turn or screw it in with a wrench. Bore to the centre of the log with a 1¼-inch auger, put in powder sufficient; screw in steel plug, pass fuse to connect with powder, make a square mortice in a heavy block, say equal in size to a 4×4 scantling, to fit the top of the screw; connect this mortice with a hole to pass the fuse through. This will prevent the screw from blowing away with the explosion. As the proof of the pudding is in the eating, I would testify that I have used this screw three years, have made 5,000 posts, and it is now as good as ever."


Log-splitting by blasting.


Steel screw-plug.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Lardizabala biternata.—This is the finest addition to our wall-plants that has been made for many years; it is evergreen, and the leaves are among the most beautifully-formed that we know of. We saw it in fine health on a wall at Heatherside.

Illicium religiosum—In the nurseries at Heatherside, in Surrey, this interesting shrub, rarely seen in our gardens, and then usually as a wall or a pot-plant, thrives well in peat beds, and forms a very ornamental evergreen shrub.—R.

Comparative Longevity of Trees.—The following table, based on an examination of the annual concentric layers of the oldest known trees, appears in a recent number of the *Illustration Horticole*. Judas tree, 300 years: common Elm, 335; common Ivy, 450; common Maple, 516; White Birch, 576; Orange-tree, 630; Evergreen Cypress, 800; common Olive, 800; Walnut, 900; Oriental Plane, 1,000; common Lime, 1,100; common Fir, 1,200; common Oak, 1,500; Cedar of Lebanon, 2,000; Taxodium distichum, 3,000; Yew, 3,200.

THE LIBRARY.

FIELD AND FOREST RAMBLES.*

To those who may feel interested in an excellent account of the natural resources and products of the Canadian province of New Brunswick, we cordially recommend this well-written work as one of no ordinary value. The author, while modestly disclaiming all pretension to put it forward as an exhaustive treatise on the natural history of a district of large extent, and hitherto but little studied, appears to us to have omitted nothing deserving of notice in the animal life and main features of the country. The past and present condition of the natives; the life of the backwoods settlers; the various animals, birds, reptiles, and fishes; the climate, scenery, and geology of the province, are successively described in a manner which testifies to the knowledge and observant research of the writer. The book has also the attractions of a pleasing style and clear and graphic language. Dr. Adams has long been known as an ardent and accomplished naturalist, and those who have enjoyed his previous works on the natural history of India, the Nile Valley, and the Maltese Islands, will not fail to welcome his present volume as a valuable contribution to the spread of general knowledge. We have ourselves been greatly pleased and instructed by our perusal of "Field and Forest Rambles," and give the following extracts as specimens of the style and spirit of the work when treating of such matters as are likely to interest the readers of The Garden:—

FORMATION OF SWAMPS.—THE PITCHER PLANT.

The moss swamps, or "caribou barrens," are met with throughout the region, either in the open or in the forest. They appear to have been originally formed from melted snow accumulating in hollows, where in process of time mosses and other aquatic plants gained the ascendency, transmuting the surface into a soft bog, which gradually dried up until the decomposing weeds formed a soil where the Coniferous trees took root; first in small numbers here and there, their dwarfed dimensions and outward surfaces densely covered with trailing moss and lichen, showing a struggle for existence. In the less reclaimed parts we find thickets of Alder, Willows, &c., while the Labrador Tea plant (Ledum palustre) and other shrubs flourish on the bog generally, where the hare and musk-rat make their tracks, the latter towards some Reed-covered pond not yet fully overrun by aquatic plants. Thus it would seem that many of the smaller lakes are steadily disappearing; the rate, however, at which this is going on cannot, as a matter of course, be accurately computed in a comparatively speaking newly settled country; but I have been assured, on the authority of residents, that many barrens now exist where lakes stood not fifty years ago. Some barrens may have both effluent and affluent streams, but many are mere hollows fed by the melting snow on their sides. The barren is, moreover, a favourite feeding ground of the reindeer, where it ploughs up the snow with its snout and feet in quest of moss and lichen, divining, in a remarkable manner, the particular spots where these plants grow in luxuriance. Conspicuous among the flora are various sorts of Orchises, remarkable for elegance and beauty, while the well-known Pitcher plant (Sarracenia purpurea) is still more attractive, on account of the remarkable construction of its foliage. It would be difficult to assign a reason for this unusual construction of the leaf, inasmuch as there is no need of any such contrivance to hold water, seeing that the plant is always well supplied from the wet bog in which it grows, unless, as indicated by Gray, the drowned insects furnish manure to nourish it. What induces the fly to go into the cavity? Perhaps attracted by the hope of procuring subsistence, after traversing the part covered with bristles, it finds itself unable to return; or, losing its footing, falls into the well, from whence it is unable to extricate itself on account of these obstacles.

EFFECTS OF FROST ON FOREST TREES.

I was awoke several times by the cracking of the branches and trunks of the forest trees, consequent on the lowness of the temperature, sounds to which my companions had been accustomed, but they were novel to me, and towards midnight became so frequent and loud that one might have imagined pistols were being fired all around the camp. In certain forest tracts it will be noticed that Spruces, especially the black sort, also Birch and other hard and soft-wood trees, are furrowed by deep longitudinal seams, extending often throughout the entire length of the trunk, and even penetrating to the pith. This splitting of the wood is owing to extreme cold acting on the vegetable fibre, and no doubt produces the reports above-mentioned, which are also occasioned by the snapping across of the decayed branches. I did not observe the longitudinal rents in saplings; it may be for the reason that their fibres admit of more elasticity than the old tree. Moreover, although the rent does often extend to the centre, there is seemingly no evil effect on the health of the tree, and in the course of a few years it gets filled up by new bark, when the outline has much the appearance of the seam produced by lightning. The explosion consequent on such a rent is often startling; and although the fissure may not be evident immediately afterwards, it opens out after the thaws of spring. My always obliging friend, Mr. Edward Jack, to whom I am much indebted for valuable information on forest lore, informed me that the trees for the most part affected grow in exposed places, such as ridges where the north wind plays. Indeed, in felling Maple and other hard-wood trees for firewood, I have been astonished to observe how deeply the cold will penetrate into the substance of the stem without disorganizing or seemingly impairing the vitality, even to the freezing of the central fibres. The authority above named moreover assured me that trees covered with moss were not subject to these rents, being, no doubt, protected thereby. The effects of cold are, moreover, exemplified by the quantities of last year's growths to be seen strewing the snow around the trunks of both the evergreen and deciduous-leaved trees; hence there is a cropping of the tips of the branches in these latitudes not observable in the trees of milder climates. And no doubt from this cause it is that not only the leaf falls sooner and assumes a brighter tint than in central Europe, and that the former have fewer branchlets as compared with corresponding species in milder climates.

THE TREES IN AUTUMN.

October 5th.—Splendid autumn weather; more enjoyable than any of the months of summer, as there are no insects to annoy, and the heat is subdued. Many of the hard-wood trees have now put on their gorgeous autumnal attires, always most varied and beautiful in saplings. I notice that the first leaves to open out in spring are the first to change colour in the fall; and these are usually near the extremities of the lower branches, and thus fully exposed to the sunlight; hence, Maples in the middle of the forests do not change colour so soon as trees on the skirts or in the open. As to the change in the coloration of the leaf, as displayed in the Canadian forest, it may, I think, receive the deep tinge of colouring from a sudden check to the circulation through cold drying up the sap, inasmuch as I have always found that as soon as the change begins to appear, then the connection of the leaf-stalk with the branch is so slender that there is no difficulty in separating the two; whereas in the healthy leaf this is accomplished with difficulty. And no doubt the low temperature, either by a sudden effort, or by causing a strangulation at some point (perhaps the point of junction between the stalk and stem), brings about the colorations alike remarkable for their brilliancy and variety, as compared with the leaf of more temperate climates. To persons who have not seen them before, there is an amount of grace, elegance, beauty, and variety in the grouping and coloration of the Canadian forest trees at this season really beyond conception. The bright and variegated hues of the Maple and Moose wood, with the Birch, Beech, &c., either dispersed, grouped, or solitary, form beautiful pictures, each tree vying with the others in the transcendent beauty of its dapplings and shadings, which, coupled with the cool bracing climate, create such happy feelings in the lookers-on, that I think if the question is asked the traveller what he most admired in a Canadian forest, he would unhesitatingly decide in favour of the autumnal change of the leaf.

GARDEN ACROSTIC.

Here tender flowers and stately Palms,
Afford a glad surprise,
And Orchids chaste unfold their charms,
Beneath our murky skies.
1. Erst he o'erran the Roman world
And Europe's kings to ruin hurl'd,
His ruffian mind may still be traced
By universal want of taste.
2. No lover ever loved more truly yet.
Than did this luckless wight his Juliet.
3. He should have held his rights more dear,
Than barter them for lust of cheer.
4. Through cloud, through sunshine, thunder-storm, or
shower,
I rush along at forty miles an hour.
5. I always go before the King,
No man would miss me more;
Indeed, without my constant help,
He cannot even snore.

Salmoniceps.

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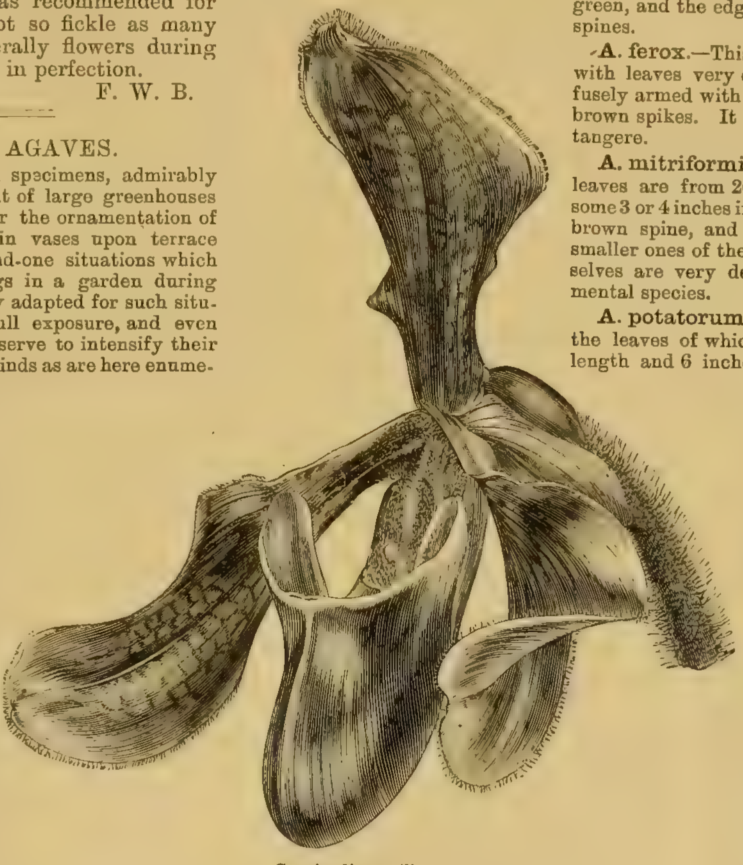
* "Field and Forest Rambles; with Notes and Observations on the Natural History of Eastern Canada." By A. Leith Adams, M.A., M.B., F.R.S., F.G.S., Staff Surgeon-Major. Author of "Wanderings of a Naturalist in India," "Natural History and Archæology of the Nile Valley and Maltese Islands." London: Henry S. King & Co., 65, Cornhill, and 12, Paternoster Row. 1873.

THE INDOOR GARDEN.

CYPRIPEDIUM VILLOSUM.

This robust-growing free-flowering species from Bhotan has a close-tufted habit and bright green leaves, measuring from 12 to 14 inches in length, and about an inch in breadth. The bases of the leaves are spotted behind with purple. The flowers, which are large, are borne singly on scapes from 9 to 12 inches high, both scapes and flowers being thickly beset with brownish hairs. The flowers are partly green and partly of a bright cinnamon-brown colour, and have a very glistening appearance, shining as if varnished. The accompanying illustration shows the size and general contour of blooms produced on well grown specimens. This species grows well in an ordinary plant stove or intermediate house planted in a compost of turfy loam, peat, and dried cow-dung, and may be treated as recommended for the other species. It is not so fickle as many of its congeners, and generally flowers during the spring, lasting a month in perfection.

F. W. B.



Cypripedium villosum.

HALF-HARDY AGAVES.

The following make splendid specimens, admirably adapted for the embellishment of large greenhouses or conservatories, and also for the ornamentation of flights of steps, for placing in vases upon terrace walks, or for the thousand-and-one situations which may be found for such things in a garden during summer. Agaves are specially adapted for such situations, because they enjoy full exposure, and even our hottest summer days only serve to intensify their colours and markings. Such kinds as are here enumerated, though not altogether hardy, may be grown by persons who have no glass structure whatever; inasmuch as they can be safely stowed away in a coach-house or stable, or even in a cellar during winter. In such situations they must, however, be kept quite dry, and excluded from light. They should, moreover, be dry before being placed in their winter quarters, when an old mat or two, tied over the leaves, is all that will be necessary, except during very severe weather, when a little extra covering may be given them. Agaves are popularly known as American Aloes, but they really have nothing to do with the genus Aloe. They are remarkable for their longevity, and it is asserted that they bloom only once in a hundred years. With most of the species this is true, in one sense, for the terminal bud running up in the form of a flower-spike so completely exhausts the plant producing it that death is the result.

A. americana.—This may be regarded as the type of the family. It forms a handsome plant in all stages of growth, whether the leaves are a foot in length or 6 or 7 feet in length, and 6 or 8 inches in breadth. They are thick and massive in appearance, somewhat sparingly furnished with spines at the edges, but armed at the point with a very formidable one.

A. americana variegata.—This beautiful form of the plant just alluded to, attains about the same size, and like it is of slow growth. The centres of the leaves of this variety are dark green, whilst the margins are broadly banded with rich yellow.

A. americana medio-picta.—This is not so robust as the two previously named kinds, and it differs from them in having the central portion deep orange yellow, and the margins green; the edges of the leaves are furnished with brown spines, and the point terminates in a long stout one. It will be well to give this a little extra covering in winter.

A. americana striata.—This, although less handsome than the former, is a beautiful variety, and grows to about the same dimensions. The ground colour is glaucous green, irregularly streaked throughout the entire length with yellow or white. It is very handsome, and very desirable as a contrast to the others.

A. coccinea.—The leaves of this are very thick and massive, the colour is intense deep green; the apex is armed with a formidable red spine, and the edges more sparingly with smaller ones of the same colour, from which its specific name is derived.

A. lophantha.—This is a distinct and less massive plant than the preceding. Its leaves are some 3 feet long and nearly 2 inches wide at the base, the ground colour being dark green, with a pale green central band; the edges are bordered with white, and the point ends in a red spine. It forms a handsome specimen, and should have a little wrapping in winter.

A. Jacobiana.—A noble plant, the leaves of which are some 2 or 3 feet in length and about 6 inches broad, armed at the point with a long stout incurved spine; the colour is deep green, and the edges are furnished with large flat spines.

A. ferox.—This is a massive-looking species, with leaves very deep green in colour, and profusely armed with stout and sharp dark reddish brown spikes. It is, in fact, a veritable noli-me-tangere.

A. mitriformis.—When this is well grown, its leaves are from 20 to 30 inches in length, and some 3 or 4 inches in breadth, terminated by a long brown spine, and the edges are furnished with smaller ones of the same colour; the leaves themselves are very deep green. It is a fine ornamental species.

A. potatorum.—This is a magnificent species, the leaves of which attain upwards of 3 feet in length and 6 inches in breadth, and terminate in a very long stout spine. They are very deep, heavy green in colour, with lobed edges, where they are furnished with large flat brown spines.

A. Salmiana.—The leaves of this species are very massive, and borne on large plants, are upwards of 4 feet long, terminating in a very long, round, straight brown spine; the thick leaves are dark green, and are armed at the edges with large recurved dark brown spines.

A. picta.—At first sight this might be mistaken for A. americana variegata. Closer inspection, however, soon dispels the delusion, for the leaves are longer, narrower, and not disposed in the compact rosulate manner of those of that plant. They measure from 2 to 3 feet in length, but do not reach more than about 2 or 2½ inches in breadth, terminating in a long, stout, red spine. The centre of the leaf is dark bright green, having a broad marginal band of pure white, and the edges are furnished with small red spines. It is a very handsome plant, but a little more tender than the two previously-named kinds.

A. picta brevifolia.—In most respects this resembles the preceding, but, as its name implies, the leaves are shorter, and the marginal band is frequently suffused with yellow instead of white. Owing to the leaves being shorter, too, they are not so pendulous or twisted about as those of picta.

A. mexicana.—A fine stout, compact-growing plant, with leaves from 2 to 3 feet in length, and about 4 inches wide, or, perhaps, a little more in the widest part, very glaucous green, and armed at the point with a very stout spine, but at the edges the spines are somewhat small and distant.

A. Humboldtiana.—This superb plant is rare, but very handsome and distinct. The leaves are somewhat stout, some 3 feet long, broadest in the centre, deep green, and furnished at the top with a stout, reddish brown spine, the edges being closely set with smaller spines of the same colour.—*Farmer.*

THE FLOWER GARDEN.

MR. DARWIN ON PRIMROSES, COWSLIPS, AND OXLIPS.

As much confusion still exists among cultivators as to the relationship of these plants and the forms of hybrids that spring from them, we have thought it well to reprint from the *Journal of the Linnean Society* the more important points in Mr. Darwin's remarkable essay on the subject, in the hope that it may serve to clear up a matter on which many of our correspondents seem to be interested.

The claim (says Mr. Darwin) of the above three forms (namely, the common Cowslip, Primrose, and Bardfield Oxlip) to be ranked as distinct species has been discussed at greater length than that of almost any other plants. Linnæus considered them varieties, as do some of the most distinguished botanists at the present day; whilst others who have carefully studied these plants do not doubt that they deserve to be ranked as distinct species. The following observations show, I think, that the latter view is correct; and they further show that the common Oxlip, which is found in most parts of England, is a hybrid between P. veris and vulgaris. The Cowslip differs so conspicuously in general appearance from the Primrose, that nothing need here be said with respect to their external characters. But some less obvious differences deserve notice. As both species are dimorphic, their complete fertilisation depends on insects. They emit a different odour. The Primrose, when legitimately fertilised, produces on an average many more seeds than the Cowslip, namely, in about the proportion of 100 to 55. It is a more important distinction that both the long-styled and short-styled forms of the Primrose, when illegitimately fertilised with their own pollen, are much more fertile than the corresponding forms of the Cowslip when similarly treated. When long-styled plants of the Cowslip are protected by a net, so that they cannot be visited by insects, they yield no seed, as I found to be the case with no less than eighteen plants; and the short-styled form is only a little less sterile. The long-styled Primrose, on the other hand, when similarly protected, produces a considerable number of capsules, of which twenty-three contained on an average 19·2 seeds: the short-styled form produces under these circumstances fewer capsules, of which fourteen contained on an average only 6·2 seeds. This great difference in the fertility of the Cowslip and Primrose, when all insects which are capable of exclusion are excluded, depends in part on the Primrose being innately much more self-fertile than the Cowslip, and in part on the former being much frequented by thrips, which, dusted with pollen, may often be seen crawling within the flowers.

The Primrose, as everyone knows, flowers a little earlier in the spring than the Cowslip, and inhabits slightly different stations and districts. The Primrose generally grows on banks or in woods, whilst the Cowslip is found in more open places. The geographical range of the two forms is different. Dr. Bromfield remarks that "the Primrose is absent from all the interior region of northern Europe, where the Cowslip is indigenous." In Norway, however, both plants range to the same degree of northern latitude. The Cowslip and Primrose, when reciprocally crossed, are far from fertile. Gartner crossed twenty-seven flowers of P. vulgaris with pollen of P. veris, and obtained sixteen capsules; but these did not contain any good seed. He also crossed twenty-one flowers of P. veris with pollen of P. vulgaris; and now he got only five capsules, containing seed in a still less perfect condition. Gartner knew nothing about dimorphism; and his complete failure may perhaps be accounted for by his having crossed together the same form of the Cowslip and Primrose; for this would have been an illegitimate as well as a hybrid union, and would consequently have been sterile in the highest degree. I was rather more fortunate in my trials: I crossed legitimately three flowers on the long-styled and three on the short-styled Cowslip, with pollen from the opposite form of the Primrose, and obtained one capsule containing the large number of forty-eight apparently good seeds. I crossed on the same plant six flowers illegitimately, with pollen from the corresponding form of the Primrose, and obtained three capsules, containing seeds so poor that there was no chance of their germination. I likewise fertilised twelve flowers of the Primrose, consisting of both forms, with pollen from both forms of the Cowslip, and eighteen flowers in the same manner with pollen of the Polyanthus. I should here state that the Polyanthus is a variety of the Cowslip, as I infer from their mongrel offspring being perfectly fertile *inter se*; and as there seems to be no essential difference in the action of Cowslip and Polyanthus-pollen on the Primrose, the results are here run together. Eight long-styled and seven short-styled flowers of the Primrose were legitimately crossed with pollen of the Cowslip and Polyanthus, and, together, they yielded six capsules, containing on an average thirty-seven seeds, some of fine quality and some only moderately good. The pure Primrose, when legitimately fertilised by pollen from the Primrose, yields an average of almost exactly double this number of seeds, viz., seventy-one. Lastly, eight long-styled and seven short-styled flowers of the Primrose were illegitimately fertilised by pollen of the Cowslip and Polyanthus, and, together, they yielded only four capsules, containing on an average only thirteen seeds, some good and some poor. The Primrose, when illegitimately fertilised by pollen from the Primrose, yields an average of about forty-four seeds. We thus see that a cross between the same forms of the Primrose and Cowslip is far more sterile than a cross between the opposite forms. The Primrose, especially the short-styled form, when fertilised by the Cowslip, is less sterile, as Gartner likewise observed, than the Cowslip when reciprocally fertilised by the Primrose. I sowed the seeds produced from the several foregoing crosses; but none germinated except those from the short-styled Primrose fertilised by the pollen of the Polyanthus; and these seeds were the finest of the whole lot. I thus raised six plants, and compared them with a group of wild Oxlips, evidently produced from the same capsule, which I had transplanted into my garden. One of these wild Oxlips produced slightly larger flowers than the others, and this one was identical in every character (in foliage, flower-peduncle, and flowers) with my six plants, excepting that the flowers in the latter were tinged of a dirty red colour.

We have now seen that the Cowslip and Primrose cannot be crossed either way except with considerable difficulty, that they differ conspicuously in external appearance, that they differ in certain curious physiological characters, that they inhabit slightly different stations, and range differently. Hence those botanists who rank these plants as varieties ought to be able to prove that they are not as well fixed in character as are most species; and the evidence in favour of such instability of character does appear at first very strong. It rests, first, on statements made by several competent observers that, from seeds of the same plant, they have raised Cowslips, Primroses, and Oxlips; and, secondly, on the frequent occurrence in a state of nature of plants presenting every intermediate gradation between the Cowslip and Primrose.

The evidence, however, on the first head is of little value; for, dimorphism not being formerly understood, the seed-bearing plants were in no instance protected from the visits of insects; and there would be almost as much risk of an isolated Cowslip, or of several Cowslips, if consisting of the same form, being crossed by a neighbouring Primrose and producing Oxlips, as of one sex of a diœcious plant, under similar circumstances, being crossed by the opposite sex of an allied and neighbouring species. Mr. H. C. Watson, a critical and most careful observer, made many experiments by sowing the seeds of Cowslips and of various kinds of Oxlips, and arrived at the following conclusion, namely, "that seeds of a Cowslip can produce Cowslips and Oxlips, and that seeds of an Oxlip can produce Cowslips, Oxlips, and Primroses." This conclusion harmonizes perfectly with the view that in all cases, when such results have been obtained, the unprotected Cowslips have been crossed by Primroses, and the unprotected Oxlips by either Cowslips or Primroses; for in this latter case we might expect, by the aid of reversion, which notoriously comes into powerful action with hybrids, that both parent forms in appearance pure, as well as many intermediate gradations, would be produced. Nevertheless the two following statements offer considerable difficulty. The Rev. Professor Henslow raised from seed of a Cowslip growing in his garden various kinds of Oxlips and one perfect Primrose; but a statement in the same paper, perhaps, throws light on this anomalous result. Professor Henslow had previously transplanted into his garden a Cowslip, which completely changed its appearance during the following year, and now resembled an Oxlip. Next year again it changed its character, and produced, in addition to umbels, a few single-flowered scapes, bearing flowers somewhat smaller and more deeply coloured than those of the common Primrose. From what I have myself observed with Oxlips, I cannot doubt that this plant was an Oxlip in a highly variable condition, almost like the famous Cytisus Adami. This variable plant was propagated by offsets, which were planted in different parts of the garden; and if Professor Henslow took, by mistake, seeds from one of these plants, especially if it had been accidentally crossed by a Primrose, the result would be quite intelligible. Another case is still more difficult to understand—Dr. Herbert raised, from seed of a highly-cultivated red Cowslip, Cowslips, Oxlips of various kinds, and a Primrose. This case, if accurately recorded, is explicable only on the improbable assumption that the red Cowslip was not of pure parentage. With plants of many kinds, when crossed, one species or variety is sometimes strongly prepotent over the other; and instances are known of one variety crossed by another producing offspring which in certain characters, as in colour, hairiness, &c., have proved identical with the pollen-bearing parent, and quite dissimilar to the mother-plant;

but I do not know of any good instance of the offspring of a cross perfectly resembling, in a number of important characters, the father alone. Hence we cannot admit that a pure Cowslip crossed by a Primrose would ever produce a Primrose in appearance pure. Although the facts given by Dr. Herbert and Professor Henslow are difficult to explain, yet until it can be shown that a Cowslip or a Primrose, carefully protected from insects, will occasionally give birth to at least Oxlips, the cases hitherto recorded have little weight in leading us to admit that the Cowslip and Primrose are varieties of one and the same species.

Negative evidence is of little value; but the following facts may be worth giving:—Some Cowslips which had been transplanted from the fields into a shrubbery were again transplanted into highly-manured land. In the following year they were protected from insects, artificially fertilised, and the seed thus procured was sown in a hotbed. The young plants were afterwards planted out, some in very rich soil, some in stiff poor clay, some in old peat, and some in pots in the greenhouse; so that these plants, 765 in number, as well as their parents, were subjected to diversified and unnatural treatment; but not one of them presented the least variation except in size—those in the peat growing to almost gigantic dimensions, and those in the clay being much dwarfed. I do not, of course, doubt that Cowslips exposed during several successive generations to changed conditions would vary, and that this would occasionally take place in a state of nature. Moreover, from the law of analogical variation, the varieties of any one species of Primula would probably in some cases resemble other species of the genus: thus I raised a red Primrose from seed from a protected plant, and the flowers, though still resembling those of the Primrose, were borne during one season on a long foot-stalk like that of a Cowslip.

With regard to the second class of facts in support of the Cowslip and Primrose being ranked as mere varieties (namely, the well-ascertained existence in a state of nature of numerous linking forms), if it can be shown that the common wild Oxlip, which stands exactly between the Cowslip and Primrose, resembles in sterility and other essential respects a hybrid plant; and if it can further be shown that the Oxlip, though in a high degree sterile, can be fertilised by the pure parent species, thus giving rise to still finer gradational links—then the presence of such forms in a state of nature ceases to be an argument of any weight in favour of the Cowslip and Primrose being varieties, and becomes, in fact, an argument on the other side. The hybrid origin of a plant in a state of nature can be recognised, first, by its occurrence only where both presumed parent forms exist, or have recently existed; and this holds good, as far as I can discover, with the Oxlip; but the P. elatior of Jacq., which, as we shall presently see, constitutes a distinct species, must not be confounded with the common Oxlip. Secondly, by the supposed hybrid plant being nearly intermediate in character between the two parent species, and especially by its resembling hybrids artificially made between the same two species. Now the Oxlip is intermediate in character, and is identical in every respect, except in the colour of the corolla, with hybrids artificially produced between the Primrose and the Polyanthus, which latter is a variety of the Cowslip. Thirdly, by the supposed hybrids being more or less sterile when crossed *inter se*: but, to try this fairly, two distinct plants of the same parentage should always be crossed; for some pure species are more or less sterile with pollen from the same individual plant; and, in the case of hybrid dimorphic plants, the opposite forms should be crossed. Fourthly and lastly, by the supposed hybrids being much more fertile when crossed with either pure parent-species than when crossed *inter se*, but still not as fully fertile as the parent species.

From having many experiments in hand, I did not sow the seed obtained by reciprocally crossing Primroses and Cowslips with the Oxlips, and I now regret this; but I ascertained a more interesting point, namely, the character of the offspring from Oxlips in a state of nature growing near both Primroses and Cowslips. The Oxlips were the same plants which were subsequently transplanted and experimented on. From seed thus obtained, eight plants were raised, which, when they flowered, might have been mistaken for pure Primroses; but on close comparison the eye in the centre of the corolla was seen to be of a darker yellow, and the peduncles more elongated. As the season advanced, one of these plants threw up two naked scapes, seven inches in height, which bore umbels of flowers of the same character as before. This fact led me to examine the other plants after they had flowered and were dug up; and I found in all that the flower-peduncles sprung from an extremely short common scape, of which no trace can be found in the pure Primrose. Hence these plants are beautifully intermediate between the Oxlip and the Primrose, inclining rather towards the latter; and we may safely conclude that the parent Oxlips had been fertilised by the surrounding Primroses.

From the various facts now given, there can be no doubt that the common Oxlip is a hybrid between the Cowslip (P. veris, Brit. Fl.) and the Primrose (P. vulgaris, Brit. Fl.), as has been surmised by several botanists. It is probable that Oxlips may be produced either from the Cowslip or the Primrose as the seed-bearer, but oftenest from the latter, as I judge from the nature of the stations in which Oxlips are generally found, and from the Primrose when crossed by the Cowslip being more fertile than the Cowslip by the Primrose. The hybrids themselves are also rather more fertile with the Primrose than with the Cowslip. Whether the Cowslip or the Primrose be the seed-bearing plant, it is probably fertilised by the opposite form of the other species; for we have seen that legitimate hybrid unions are more fertile than illegitimate hybrid unions. Moreover a friend in Surrey found that twenty-nine Oxlips which grew in the neighbourhood of his house consisted of thirteen long-styled and sixteen short-styled plants; now, if the parent plants had been illegitimately united, either the long or short-styled form would have greatly preponderated in number. The case of the Oxlip is interesting; for hardly any other instance is known of a hybrid spontaneously arising in such large numbers over so wide an extent of country. The common Oxlip (not the P. elatior of Jacq.) is found almost everywhere throughout England where the Cowslip and Primrose both grow. In some districts, as I have seen near Hartfield in Sussex and in parts of Surrey, specimens may be found on the borders of almost every field and small wood. In other districts the Oxlip is comparatively rare; near my own residence I have not seen during the last twenty-five years more than five or six plants or groups of plants. It is difficult to conjecture what is the cause of this difference in number. It is almost necessary that a single plant, or several plants of the same form, of one parent species should grow near the opposite form of the other species; and it is further necessary that both species should be frequented by the same kind of moth. It is possible that such moths do not everywhere abound.

Finally, as the Cowslip and Primrose differ in the various characters before specified, as they are in a high degree sterile when intercrossed, as there is no trustworthy evidence that either plant, when uncrossed, has given birth to the other plant or to any intermediate form, and as the intermediate forms which are often found in a state of nature have been shown to be more or less sterile hybrids of the first or second generation, we must for the future look at the Cowslip and Primrose as good and true species.

PRIMULA ELATIOR, JACQ., OR BARDFIELD OXLIP.

This Primula is found in England only in two or three of the eastern counties; and on the continent it has a somewhat different range from that of the Cowslip and Primrose. It inhabits districts where neither of these species live. In general appearance it differs so much from the common Oxlip, that no one accustomed to see both in the living state would afterwards confound them; but there is scarcely more than a single character by which they can be distinctly defined, namely, the linear-oblong capsule equalling the calyx in length. The capsules, when mature, owing to their length, differ conspicuously from those of the Cowslip and Primrose. Plants propagated by seed in a garden during twenty-five years have kept constant, excepting that in some cases the flowers varied a little in tint and size. Nevertheless Mr. Hewett C. Watson and Dr. Bromfield state that "exceptional instances to all the characters, taken singly, by which this plant is distinguished from P. vulgaris and veris," may be occasionally detected; it remains to be discovered whether these intermediate forms are not hybrids between P. elatior and veris, which often grow together. With respect to differences in function, both the long and short-styled forms of P. elatior are more sterile when fertilised by their own pollen than the corresponding forms of the Cowslip and Primrose when similarly fertilised.

Mr. H. Doubleday, who I believe first called attention to the existence of the Bardfield Oxlip in England, kindly sent me several living plants, which I subjected to trial for the sake of ascertaining whether they differed in their reproductive power from the common Oxlip. I did not think it worth the time and labour to ascertain whether the Bardfield Oxlip, when crossed with the Cowslip and Primrose, behaved like a distinct species; for if it can be clearly proved not to be a hybrid, and if the Cowslip and Primrose are specifically distinct, I presume that no one will any longer doubt that the P. elatior is likewise distinct.

Finally, although we may feel confident that Primula veris, vulgaris, and elatior, as well as the other species of the genus, are all descended from some primordial form, yet, from the facts which have been given, we may conclude that they are now as fixed in character as are very many other forms which are universally ranked as species. Consequently they have as good a right to receive distinct specific names as have, for instance, the ass, quagga, and zebra.

HERBACEOUS PLANTS AT ASHRIDGE PARK.

Amongst the many interesting and attractive herbaceous gardens now springing up in all directions, few promise to be more successful than that at Ashridge Park, the seat of Earl Brownlow, whose desire to grow every desirable hardy shrub and flower is most ably carried out by his energetic gardener, Mr. Gray, the discoverer of the pretty Anemone Hepatica marmorata, which, under his fostering care, is already beginning to form a conspicuously ornamental patch in one of the shrubbery borders. Mr. Gray makes large use of a very pretty form of Primula cortusoides amœna, which I do not remember to have seen anywhere else. It was raised some years since from one of the very first batches of seed sent out by Messrs. Veitch, and has been sedulously propagated. It has a much smaller flower than the usual form; but the colour is a much richer magenta, and it is not shaded with white towards the centre, like most of the ordinary varieties. The truss, too, is much denser and stouter, and the flower-stalks are produced in far greater abundance. It is extraordinarily hardy, standing any severity of weather, and increases with great rapidity, soon forming a dense patch of magenta and green, which for effect cannot easily be matched. Mr. Gray also grows Phlox verna with greater success than in any garden I have ever visited. He uses it as a wide margin to large shrubbery borders, where its soft green leaves form a closely-fitting carpet densely studded with trusses of rose-coloured flowers, the effect of which is indescribably beautiful. A small round bed of Myosotis dissitiflora, thickly edged with Thymus citriodorus aureo-marginatus, struck me as very effective. Mr. Gray is as active among his florists' flowers as in the herbaceous garden. He has a large stock of a fine Polyanthus, and a Wallflower, apparently a hybrid between Ch. Cheiri and Ch. Marshallii or ochroleucus, that would do more than excite the jealousy of the accomplished guardian of the parterres of Belvoir. H. Harpur Crewe.

The Rectory, Drayton-Beauchamp, Tring.

Early Flowering Tulips.—In the following list I have selected such varieties only as were all in perfection together on April 21st; and as they are sorts that were done blooming by the time the collection in general was in flower, the selection will be of value to anyone requiring early kinds to be got off the ground in time to allow early bedding plants to be put out:—L'Immaculée, fine pure white; Vesuvius, crimson; Pottebakker, yellow; Pottebakker, white; King's Crown, scarlet, belted with yellow; Golden Prince, light golden yellow; Molière, purple; Duc Van Thol, scarlet; Joost Van Vondel, vermilion, white feathered; Van der Neer, purplish puce; Proserpine, rose; Vermilion Brilliant, large scarlet; Brutus, scarlet, shaded with orange; Duc Van Thol, rose; Van der Helst, rose, blush feathered; Gloria Solis, double crimson and yellow.—R. H. Bard.

Aloysia citriodora (Sweet Verbena).—Anyone who desires to see this old favourite plant grow freely and finely, and who wishes to have lots of it for cutting, not only for flavouring claret cup, but also for mixing with flowers in the drawing-room vases, should plant out a few plants of it at the foot of a warm south wall. The low front walls of plant and fruit houses are very suitable for this and for other plants of a similar kind. It is best not to attempt anything in the shape of training; but, on the contrary, to allow it to develop itself freely. You may then "cut, and come again" as often as you please. In all probability the first severe winter may cut the plants down to the ground; but then in early spring they will start up again from the bottom, and attain in a short time even greater development than before. It is easily propagated by means of cuttings; small pieces of ripened wood put in in March in a gentle hot-bed strike freely, and when potted off soon make nice plants. Young shoots made in heat will also strike in spring, if kept close and shaded; but cuttings made of ripe wood are best. Small pieces of half-ripened wood, in a shady place out-of-doors in August, will also root quickly, and make nice little plants for the following year.—E. Hobday, *Ramsey Abbey.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Golden Thyme.—Permit me to state, in answer to the enquiries of Miss Hope, of Wardie Lodge, and others, that the Thyme about which I wrote in The Garden, is that which was sent out by Messrs. Fisher & Holmes, under the name of T. citriodorus aureus. It has stood the winter extremely well here.—D. T. Fish.

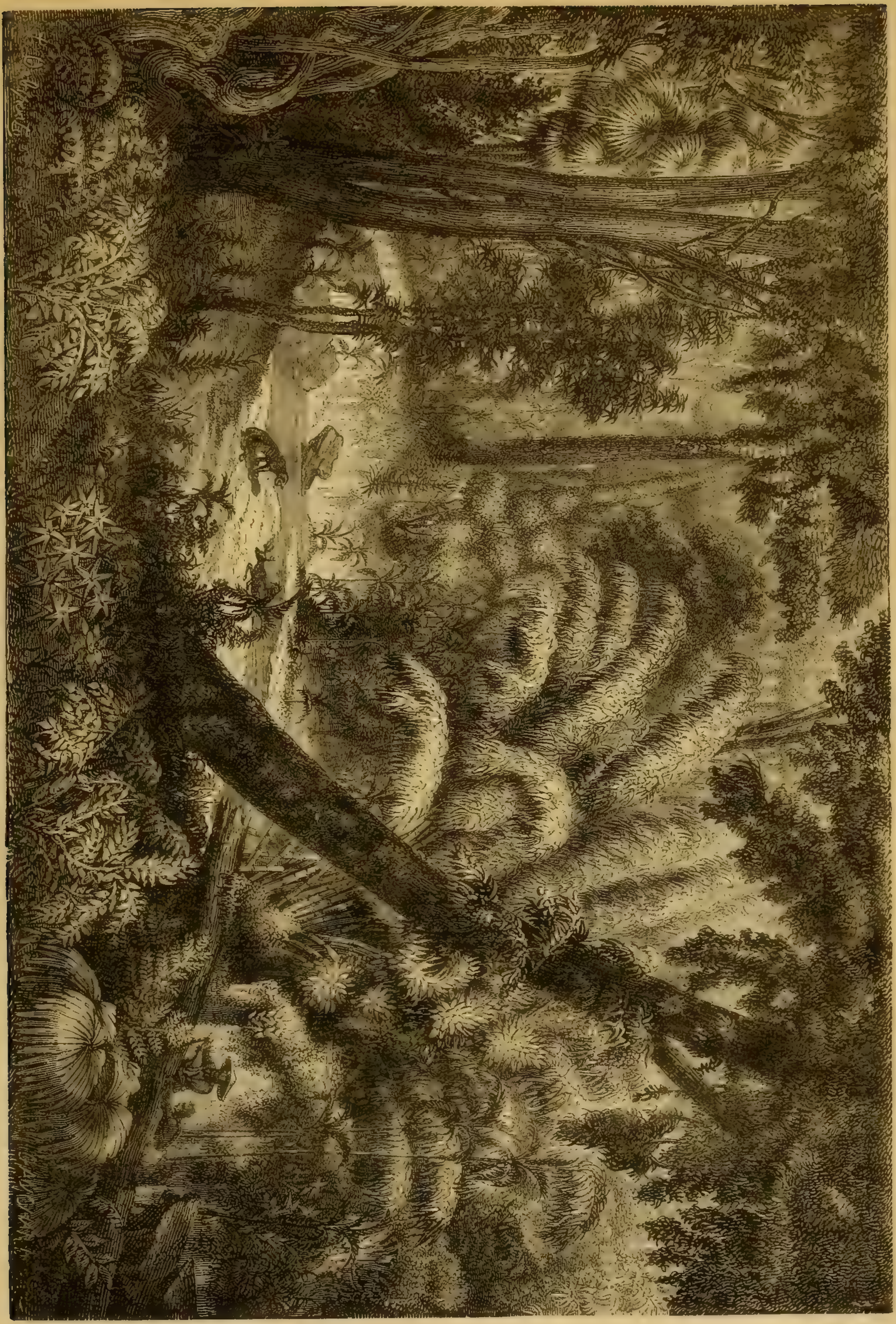
Moss Balls for Bedding Plants.—At Linton Park most of the bedding plants, when potted off, early in April, are each tied up roughly in a coating of Moss and then plunged out in frames, &c., in soil. The plants root into and through this Moss, and are very easily transplanted to their final positions in it without any injury whatever. The Moss is (of course) not disturbed in planting, the roots passing readily through it into the earth. Mr. Robson finds this an excellent plan.—R.

FOREST VEGETATION IN SIAM (CHIN-INDIA).

The South-eastern peninsula of Asia, lying entirely within the tropics, and watered by numerous rivers, is rich in the variety and luxuriance of its vegetable productions. The kingdom of Siam, which occupies a great part of the peninsula, extending from about 12° to 21° N. and from 96° to 105° E., is traversed through its centre by the river Menam, whose annual inundations, like those of the Nile, fertilise the great plain through which it flows, so that plentiful crops of rice, sugar, pepper, tobacco, coffee, and cotton, are easily raised by the inhabitants. Towards the N.E. the country becomes more mountainous and woody, and wild animals, including the elephant, rhinoceros, tiger, buffalo, leopard, bear, and crocodiles abound. Much of this part of the country is as yet little known. Our illustration, which represents a scene in a forest near the banks of the Cambodia river, between Nong Kay and Pak Lay, in lat. 18° N., well exhibits the exuberance and the variety of tropical vegetation in these regions—the Bamboos, various kinds of Palms, the Teak tree, the Sandal-wood and numerous other forest trees and climbers, rising in huge proportions from the tangled brush-wood, and, with an occasional glimpse of some wild animal, as it crosses an opening, suggesting all that the mind can conceive of the native aspect of a "forest primeval." The Grasses, as represented by the Bamboos well shown in our illustration, here attain almost the dimensions of forest trees, and are certainly not surpassed in grace of form by the Palms themselves. Fine as is the aspect of the Bamboos in the centre of our illustration, and impossible as it may seem to many to produce a like aspect of vegetation in this country, we have seen hardy Bamboos producing an almost equally good effect in the southern parts of England and Ireland.

THE FRANKFORT PALM-HOUSE AND GARDEN.

When, some three years ago, the Duke of Nassau resolved to dispose of his fine grounds and valuable plants at Bieberich on the Rhine, it occurred to some enterprising and public-spirited Frankforters that it would be an excellent thing if the rich collection of Palms, Rhododendrons, Azaleas, Camellias, Orchids, Mimoseæ, &c., could be purchased and removed to some suitable spot in the vicinity of their native city. To carry out this object, a company was formed with a capital of 300,000 florins, in shares of 250 florins; the municipal authorities granted a piece of land as a site, rent free for ten years, and in a very short space of time Frankfort possessed its Sydenham Palace and grounds in miniature. For proximity to the best end of the town no more favourable situation could have been selected, and, standing on the summit of a gentle slope, the building commands fine views of the Taunus range of hills and the surrounding country. The pleasure-grounds, which were originally only thirteen acres in extent, are being constantly enlarged, and during the process of enlargement and transformation present naturally a somewhat unfinished appearance. Considerable taste is displayed in the disposition of the beds, walks, fountains, and lake, no less than in the grouping of the trees and shrubs; and as the latter become more fully developed, the garden will lose the baldness and harshness of outline which betray its recent origin. With regard to the Palm house, this, if not distinguished exteriorly by elegance of form, is found by experience eminently adapted for the different purposes it was intended to serve. It consists of a large central hall or stove, containing in addition to a variety of Palm trees and tropical plants, such as Latania Borbonica, Phœnix dactylifera, Caryota urens, Cocos Boutryana, Dracæna Australis (25 to 30 feet high), Dion edule, Araucaria Cunninghami, Yucca, Aloe, Musa, and Chamædorea, a naturally arranged piece of rockwork, a cascade, &c.; also a winter garden or gallery, surrounding the stove, and stocked with Camellias, Roses, Orchids, Azaleas, and Rhododendrons; a music hall, and a refreshment room. The music hall is merely separated from the stove by a glass partition, so that whilst the ear is enjoying the classical compositions of Beethoven and Mendelssohn, the eye reposes on some of the choicest productions of nature. To modify the light, the roof is constructed of soft-coloured opaque glass, and the comfort of the audience has been still further considered by the adoption of a good system of ventilation. The building is some 168 feet in length, by 104 in breadth, and 54 in height. So attractive have the gardens been made by concerts, floral exhibitions, &c., that the daily attendance, without reckoning annual subscribers and shareholders, now averages 500 to 600. The finances of the company are in a sufficiently prosperous condition to admit of a further extension and embellishment of the grounds, and the shares have risen to a considerable premium. T. S.



FOREST VEGETATION IN SIAM (CHIN-INDIA).

THE FRUIT GARDEN.

PEARS ON THE QUINCE.

The readers of The Garden have to thank Mr. John Scott for giving them his experience of Pears grown on the Quince stock. The following do not appear in his list, but I have found them take readily on the Quince, and most of them to yield good crops and make healthy wood, viz.:—Beurré d'Aremberg, Easter Beurré, Doyenné Bussoch, Josephine de Malines, Louise Bonne of Jersey, Marie Louise d'Uccle, Soldat d'Esperen, and Winter Nelis. Most of these are well known Pears, the Doyenné perhaps the least so, but it is a sort that has excellent qualities to recommend it, size, flavour, beauty, great productiveness, and what is somewhat remarkable, the foliage, like that of the American Creeper, turns to a deep red before the leaves fall. The Quince stock, as is well known, tends greatly to hasten the period of productiveness, but it also, in some instances, improves the quality of the fruit. Mr. Rivers long ago pointed out the second in my list as a remarkable instance of a Pear improved and altered in flavour by being grafted on the Quince stock. I should have added to my list the Orpheline d'Enghien, but I believe it is the same as Mr. Scott's Soldat Laboureur, an excellent Pear, and one that ought to be in every collection. Of the White Thorn as a stock for Pears, my experience is confined to two only—the Jargonelle, which thrives upon it, and the Josephine de Malines, which I have found to die in the second or third year after grafting. Perhaps among your correspondents one may be found who could give some information respecting the White Thorn, stating the sorts that do best when grafted on it, and the character of soil and climate where Pears so grafted would be likely to thrive. B. S.

PEARS.

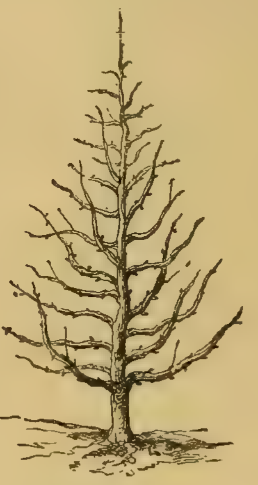
The numerous varieties of Pears are usually grafted on either Quince or Pear stocks. When grafted on the Quince, the Pear succeeds particularly well in deep moist sandy loams. When grafted on the Pear, it will also do best in this kind of soil, but at the same time it has the advantage of doing well in almost any other, including very light soils. On the Quince we have not so long to wait for the fruit, and they are finer and better; on the Pear it is less difficult of culture and lives longer. On soils, therefore, which are not so favourable to the Quince, we might use both kinds with advantage, planting Quince and Pear stocks alternately; and so, while waiting until the latter came into bearing, we should obtain crops from the former; and later on, when the trees on the Pear stocks should have come into full bearing, we could remove the others on the Quince.

Young standard Pear-trees.

Even under unfavourable conditions, the grafts on the Quince, if manured and well mulched every spring, might last for 10 or 15 years. The Pear-tree adapts itself to every form of training; those most commonly employed are: the standard, the pyramid or cone, the column, the palmette, the horizontal cordon, and sometimes the oblique cordon: on each of which forms we shall say a word or two.

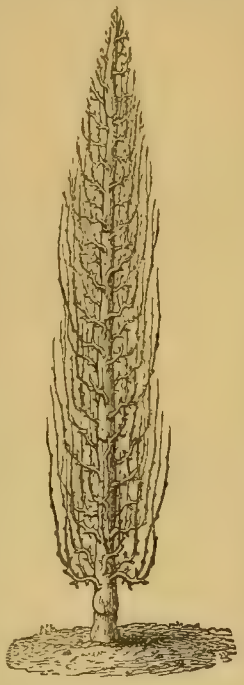
Standards.—In gardens, especially those of small size, standards are seldom planted; they are generally reserved for orchards in the open country. If, however, you have ground to spare, and can devote a portion to them, without injuring the other trees or shading them too much, and without deranging the general plan or spoiling the appearance of your garden, it would be well to plant a number of the most select varieties; they will at a future time liberally indemnify the planter for any sacrifice of space which he may have made for them. As for the farmer, who is not pressed for room, we do not merely advise him to plant them, but enjoin him to do so. Properly speaking, standard Pear trees do not require pruning; every winter the centre of the tree should be cleared of any branches that are too crowded, and that is all, to let sun and air have free circulation. When the soil is adapted for the Quince stock, and well-selected, fertile, and sound-wooded varieties have been planted, the result is splendid crops of fruit, almost without pruning or training—almost without labour of any kind. At the time of planting, each tree should be fastened to a strong stake, which should be somewhat longer than the tree, otherwise the wind, as it sways the tree about, would rub it against the top of the stake, and thereby, especially when the fastenings began to loosen, cause wounds. We may also give the Pear tree the form of the pyramid or cone, which is, indeed, natural to some varieties.

Pyramids.—The pyramid or cone form is in high repute; it is a very ornamental form, and well calculated for securing a good crop. A fine strong pyramid, well-pruned, symmetrical and thriving, certainly is a handsome object. Like all the other forms which we are about to consider, the pyramid requires pruning more or less. With respect to the annual growth which we wish our young trees to make, it is wise not to desire too much; from five to seven main branches per annum is the most that we should allow. One remark on this subject: when laying out these branches for the next year's growth, we generally prune above and close to the bud which is intended to continue the branch, leaving a small spur afterwards as the bud pushes. In order both to strengthen it and give it the direction which we wish it to take, a support or splint is attached to it. This is a complicated operation; a better way is, instead of cutting close to the bud, to leave a long spur (say 4 inches), from which the buds are to be removed; to this the shoot is afterwards tied, and when it is sufficiently grown to maintain itself in the desired position, the spur can be cut off altogether, there being no further occasion for it.



Pyramid Pear-tree.

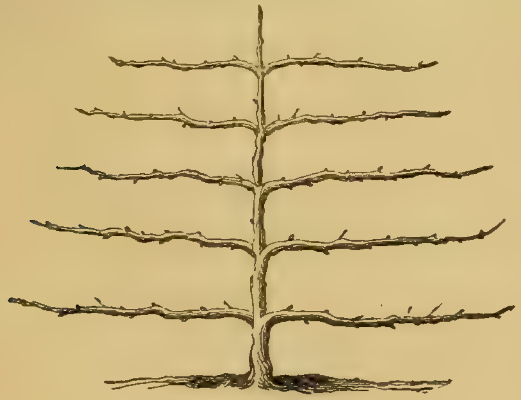
It is a mistake to prune strong-growing sorts too closely, especially those on Pear stocks, because the circulation of the sap being thereby confined to a more limited space, it will have a tendency to produce strong wood where it is not wanted. It will, therefore, be best in pruning to use a judicious moderation. It is also a mistake to cut the lateral branches too short, because, the flow of the sap being thereby restricted to the stem, will cause the production of overgrown leading shoots. It is equally wrong to allow these branches to grow too long, as this impoverishes the stem and retards the due growth of the leading shoot. In both cases the trees seldom bear well, for want of a proper balancing of the parts, and both extremes must be avoided. A well-proportioned pyramid should generally have a diameter two-thirds of its height. If, however well-proportioned, a pyramid on the Pear-stock should prove unproductive, it may be brought into good bearing by leaving it unpruned for a few years. There are also other methods: for example, making a circular incision in the bark at the bottom of the stem nearly half an inch wide, which must be kept open; otherwise, if allowed to close up, the tree will push more vigorously than before. Root-pruning will also produce the desired effect. It is wise to take advantage of everything, and we may turn the superabundant vigour of our trees to good account, by grafting them with fruit-buds, which will bear the following year, and produce fine fruits.



Columnar Pear-Tree.

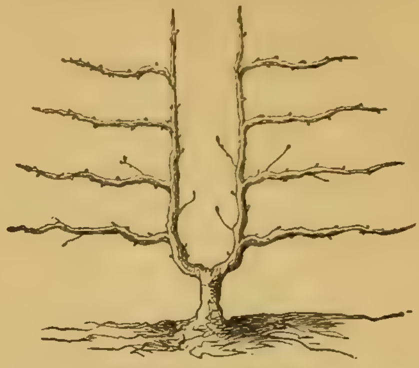
Columnar Trees.—The columnar form has this to recommend it, that it is easy to establish, and allows of a greater number of varieties being grown in a given space. The stem in this case is like a simple branch furnished with fruiting spurs. These are pruned above a rudimentary bud or eye; and as for the stem, that is allowed to grow as tall as the vigour of the tree will permit, unless you are afraid you will not find a ladder long enough to reach to the top. Trained in columnar fashion, Pear trees do not present a very graceful appearance, but the form has so many advantages, that we cannot avoid recommending it; they are easily managed, occupy very little space, bear plentifully, and do not present a large surface to the winds; all this deserves to be taken into account. It is hardly necessary to remark that the Pear grafted on the Quince is exclusively adapted for this form; those on Pear-stocks would be too vigorous, unless planted in a particularly poor and dry soil. Another advantage of the columnar form is that it is admirably suited for those kinds which, possessing but little, or only a moderate amount of vigour, generally make but a poor show in any of the larger forms.

Palmette-trees.—The palmette, with a single or double stem, is very much employed for trees against walls, or for espaliers. Trained either to the right or the left (mostly both ways at the same time), the side branches extend themselves in greater or less number, according to the vigour of the tree.



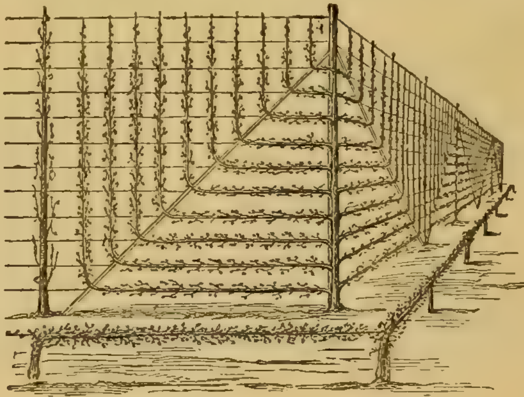
Single-stemmed Palmette.

The palmette is easily formed in the following manner. About one foot from the graft, the young tree is cut off above three good buds—one on each side to form the first two lateral branches, and one above to continue the main axis. This last, when it has grown, is staked; and we must be careful of it, for it has to furnish in its turn another series of three buds, at a distance of 10 to 12 inches from the first three, and which will be treated in the same manner. If the buds happen not to be in the desired position, a slight twisting of the branch, before the wood has ripened, will give them the proper direction. Should a bud be destroyed by any accident, a bud inserted in its place, in July or the beginning of August, will repair the damage.



Double-stemmed Palmette.

With very vigorous subjects on strong stocks, we may even gain time, as with them we may form two series of branches instead of one in the same year. As soon as the young branch begins to pass into the woody state, make circular incisions above two buds of the lower series, and you are sure to succeed; these incisions, of course, should be made while the tree is in leaf. This process is but little known, and is a most useful one. In training, it is always better to train the lateral branches a little obliquely, at least for the first few years; by degrees they can be brought to their final horizontal position. A great improvement has been for some years made in the training of the palmette; this consists in bending the ends of the branches upwards, and has received the title of Palmette-Verrier, from the name of one who did not invent it, but first applied it extensively and recommended it so highly that his numerous pupils gave to the system, previously without a name, that of its zealous propagator. We cannot, in fact, speak too highly of this form; for the palmette, it is the form of all others. The vertical direction, in drawing the sap to the ends of the branches, neutralizes the bad effects of the horizontal position, which tends to encourage a sluggishness in the flow of the sap; it is also in accordance with Nature, in which we generally find the ends of branches inclined to the vertical direction.



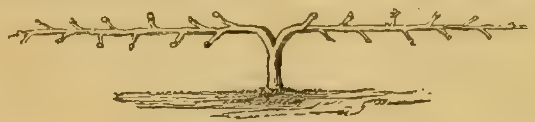
Palmette-Verrier, with cordon in front.

What we have just said has reference to the palmette with a single stem, but the same treatment will apply also to the double-stemmed form. Cut the tree to within about 4 inches from the graft, get two branches to run in the required direction, operate on each of these afterwards, so as to obtain lateral branches; observe that between the two stems a space must be left of from 10 to 12 inches, according to the strength of the subjects.

For tying the branches get some laths split, or, better, sawn; place them in the direction of the branches, and fasten them with osier twigs to the trellis or wires previously arranged along the walls or in the lines of espaliers. We do not disapprove of fastening with shreds if the walls are in sufficiently good condition for that purpose, but training on wires is the best plan. In concluding our remarks on the Palmette-Verrier, we may observe that, when trained with a few series of branches, the form is thoroughly good for varieties that do not possess much vigour of growth; when properly managed, nothing is more pleasing or more productive than small trees thus trained.

Horizontal Cordons.—This form, trained along wires, is also most suitable for varieties of feeble growth; the branches being few, and close to the ground, the fruits feel the good effects of the favourable position and become very fine. It is an excellent way of cultivating any kinds of which the fruit does not do well in the open air, such as the Brown Beurré, St. Germain, and others.

There are two ways of forming the horizontal cordon; the first is by means of a graft of one year's growth bent at the height which is desired for the cordon; and that the curve may not produce an effect disagreeable to the eye, it is brought almost to a right angle, by fastening the young stem firmly to a board driven into the ground until the upper end of the stem is brought nearly to a level with the place where the curve is made. This should be done carefully, and when the sap is ascending, to avoid as much as possible the chance of fracture. The second and surer method is to cut the young tree. In cutting, a spur is left by which the stem may be fastened to the wire. It is preferable to train these little trees right and left; it is just as easy as in one direction, and looks much better. On sloping ground, however, we should use the single cordon only. Nothing is more simple than this form, and yet we seldom see trees well trained as horizontal cordons; this is because they are generally planted too closely together, because a bad system of pinching is employed, and moreover, because they are almost always too closely pruned, whereas the ends of the branches should be merely trimmed. During the first three months' growth, and in proportion as they develope themselves, the young shoots should always be pinched short, and while they are still in a very herbaceous condition; this is indispensable. The sap, as is well-known, is constantly drawn up by the extremities, but these extremities not having, so to speak, been pruned, the shoots do not acquire any inordinate development, and speedily produce fruit-buds. Two or three years after planting, the pruning should be limited to shortening the extremities and removing the superfluous fruit-buds, of which it will be sufficient to leave two on each shoot, and be particular that these are the two nearest the main branch. Fourteen inches from the ground is the proper height for the branches of cordon Pears. Fasten them to the wire attached to iron or wooden posts placed at each end of the line. If you want to have these posts firm, bury them to the depth of about 20 inches, and let each have a stout jamb with the lower end resting on a flat stone or brick placed obliquely in the ground—any other props are unnecessary and often ugly—and let the posts not be of so great dimensions as to offend the eye. It is to be observed that after a few years, when the trees have become strong, instead of being supported by the wire, it is they that support it.


Horizontal Cordon, formed with two shoots.

One concluding observation. We have said that almost everywhere trees that are intended for horizontal cordons are planted too closely together; this is one of the causes of failure. We recommend a distance of 10 feet as the minimum; at a later period it will be necessary to increase this distance to 20 feet, by removing every second tree; the subjects thus removed and taken up with care can be utilised elsewhere.

Oblique Cordons.—This form, which is not without its drawbacks, may be employed with advantage on sloping positions; in this case the tree must be trained in the direction of the slope. An oblique cordon is formed by cutting down a young tree, planted upright in the usual way, to about 8 inches from the graft. A single shoot is retained and fastened at an angle of 60 degrees; during the following year this angle is gradually reduced to 45 degrees. We might, indeed, at the outset, fasten it permanently at any angle, and not cut it so short, but it is much better to follow the method we have just indicated. What has been said refers to the single form, that is, with one branch; with the double form we proceed in the same manner, with the exception that after the first cutting we retain two shoots instead of one; the first, which is nearest the end, is to continue the main axis; the second will form the lower branch. The following year we cut the leading shoot at the distance of a foot from the former cutting, and retain only a single shoot to form the upper branch. The oblique form is faulty in this respect, that, in consequence of the sloping direction, the branches that are produced on the lower side are less profitable than those that spring from the upper, for want of being properly balanced for an equable flow of the sap.

DOUBLE GLAZING FRUIT HOUSES.

I have tried this system of glazing on a Melon house and cutting frame, and have been somewhat startled with the result, which, to tell the truth, I might have foreseen. True, I found the night temperature could be kept up more steadily and with less fuel, but I found also that the sun's influence was scarcely felt during the day—had hardly found power, in fact, to raise the temperature of the house sufficiently to admit of proper ventilation—and so we had to fire up during the day instead of the night, to get the temperature high enough. Besides the continually saturated atmosphere was found to be highly injurious to the Melons, and positively destructive in the cutting frame, for the cuttings never got dry day nor night, unless the sashes were pushed well down, and then the cure was as bad as the disease. In the end I was compelled to take out one set of panes, and return to the old though somewhat inconvenient plan of covering the cuttings at night with a temporary glass shade or bell glasses, which were taken off again during the day, and we had no more trouble. The duplicate panes were also taken out of the Melon house sashes with the same result, though the Melons for a while were found to be so tender in the foliage, after growing in such a close atmosphere, as to require constant shading for a bit; but they soon recovered. Such has been the experience of one who started with great expectations of the system, and gave it a favourable trial. I am perfectly certain that, were our early vineries double glazed, the hottest April or May sun would never raise the internal temperature high enough to allow the necessary ventilation without a deal of assistance from fire heat. I would therefore not recommend anyone to incur the expense of double roofs without due consideration, and I shall be surprised to learn that the experience of others who have tried the plan does not agree with mine, so far as fruit culture is concerned at least.

J. S. W.

Fruit Crops in North Nottinghamshire.—On the night of the 19th and morning of the 20th, the frost in this district proved nearly as destructive to some kinds of hardy fruits as it did about the same time last year. Currants and Gooseberries have suffered most; the young fruit on the tops of the bushes, unprotected by the foliage, seemed as if scalded, and a brisk wind on the 23rd shook them to the ground in quantities. There will still, however, be a fair crop saved, for I have never seen these fruits set so thickly or their foliage look healthier then they do this year. The flowers of all the early kinds of Strawberries that had opened are blackened in the centre, and of course will prove abortive; but later kinds promise to produce good crops. Apples, being much later in flowering than last year, have escaped, and it is to be hoped that they are now out of danger. Pears, both on walls and standards, have set well, and there is a good prospect as regards the Cherry crop. Plums, however, are thin, both on walls and in orchards. Some sorts of Apricots showed at the blooming time a great paucity of blossom—the Kaisha being the only variety with me that has borne full crops for these last two years. The thermometer registered here on the morning of the 20th 2° of frost, and on the Grass 4°; we have, therefore, fared better, apparently, in the Midlands than in the Southern Counties.—William Tillery, *Welbeck, Worksop.*

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Woollen Rags as a Manure for Fruit Trees.—M. Jacquemyns, in a recent number of the *Bulletin d'Arboriculture de Belgique*, states that he has produced a splendid growth in some fruit trees planted in a poor soil, by placing from 20 to 30 lbs. of woollen rags about the roots of each tree. These rags are a slowly-acting manure, rich in nitrogen, and in the case of the fruit-trees alluded to, effected most satisfactory results.

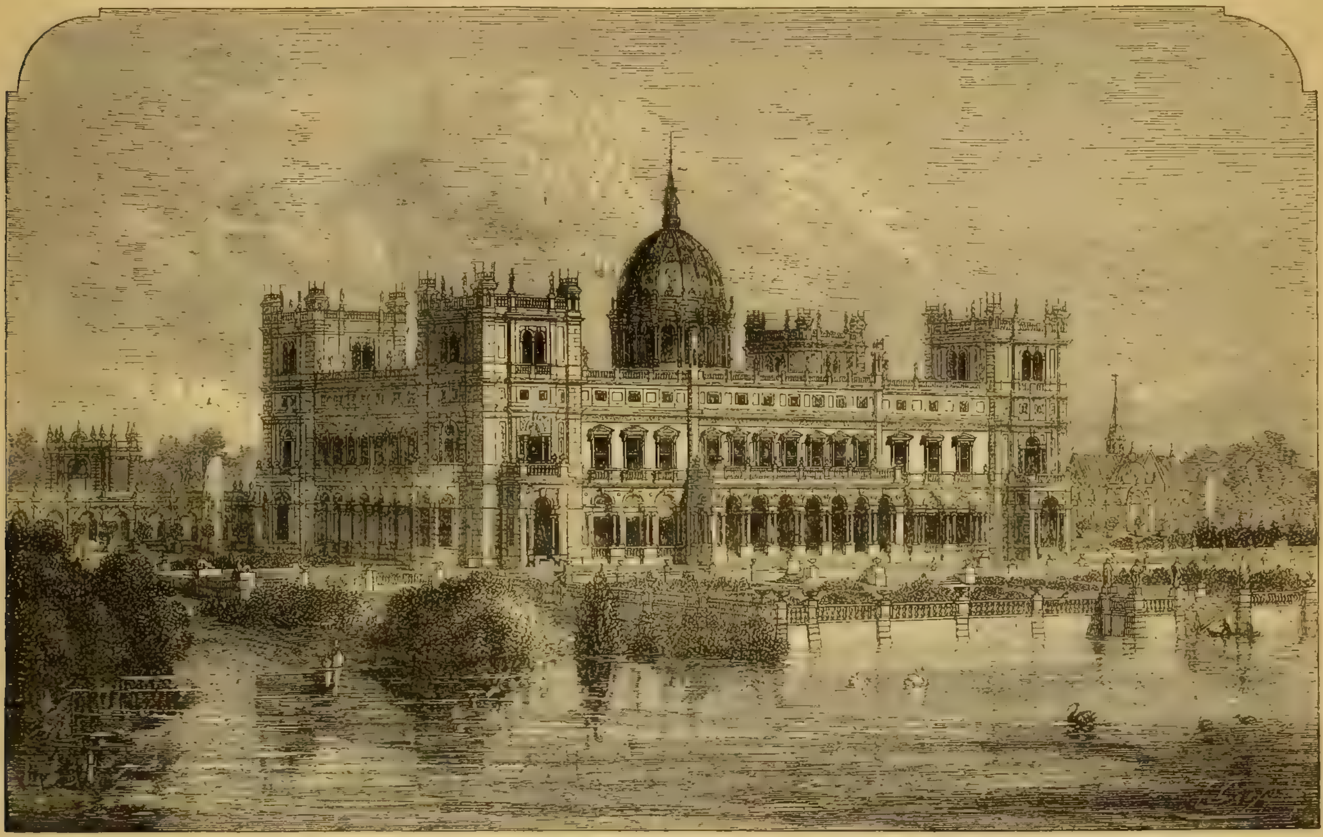
Sweet Apples.—With reference to your correspondent's inquiries on this subject, I beg to state that we have a large number of Apples in which the sugar greatly preponderates over the acid. We classify Apples into Summer, Fall, and Winter kinds, and subdivide each of these into sweet and sour. You doubtless have sweet varieties. Here they are used for baking, for cider-making, and for stock-feeding. Baked Apples and milk are regarded as one of the farmer's luxuries.—Geo. Thurber, *New York.*

Grape colouring.—It is a well-known fact that however large the bunches of Grapes or individual berries may be, without fine colour they are of little value. One of the most important points in reference to colouring Grapes, is to allow the laterals to grow freely, after the final thinning. If the leaves half hide the bunches, so much the better. I picked up this hint at Cole Orton, which is a sufficient guarantee of the excellence of the plan, as I consider Mr. Henderson to be the best cultivator with whom I am acquainted, for putting the finishing touch on Grapes.—R. Gilbert, *Burghley Gardens.*

Cropping Fruit Tree Borders.—May Strawberries be planted on fruit-tree borders? Some say they may; but others recommend me not to put such a soil-exhausting crop near my wall trees.—Lydia. [We do not consider cropping fruit-tree borders with Strawberries good gardening—quite the contrary. Indeed many gardeners are against cropping them at all, but this we think is carrying the thing to the opposite extreme, as it is very rare that borders can be dispensed with. Provided they are well manured, Lettuces and similar dwarf crops may be grown without injury to the fruit trees, but in no case should vegetables of any description be sown or planted nearer than 4 feet from the stem.]

STATELY ARCHITECTURE NEAR WATER.

The design engraved below is one of those stately architectural compositions in the country mansion category for which the Barrys (father and son) have become celebrated. There can be no doubt that the present noble design, if carried out in its integrity, will form a very magnificent object in the situation for which it is intended, and that its close proximity to the lake, in which its highly enriched *façade* will be reflected, must necessarily enhance its importance very greatly, and seem to impart to it a veritable *raison d'être* in the surrounding landscape. How much would the palatial magnificence of Versailles lose if the numerous pieces of artificial water which have been contrived there, at vast expense, were removed! The natural landscape, originally so arid and uninteresting, is magnificently lighted up by those watery mirrors, in which portions of the great palace, and whole crowds of the countless statues of its gardens, are so picturesquely reflected. In nearly all the celebrated French châteaux, from Fontainebleau to Chambord, water, of more or less extent, forms a chief and always an attractive feature in the scene. At some of the lesser of the well-known French châteaux nothing more than a broad moat exists; but, remove that moat, and carry the turf of the park close up to the stately rampart or terrace, and half the charm of the scene, even of the building itself, would be destroyed. Even the poor architecture of Buckingham Palace gains very considerably from being seen across the canal-like piece of water that is, with the exception of a few fine old trees, almost the only attraction of St. James's Park.



Stately architecture and terraced garden near water.

The horticulturist, in producing his best effects, has, in fact, as much to do with the introduction of water where it is absent, as with the disposition of his slopes of earth and their plantation with suitable trees. This, as a general principle, is so widely acknowledged as to be almost a truism; but the study of the effects that may be produced by the close proximity of water to important buildings of a palatial class has not been either so skilfully or so frequently attended to as that of the production of lakes, at a considerable distance from the residence, and intended to group and combine in effect with foliage rather than with buildings. Our engraving of Mr. Barry's design for the new mansion at Clumber—and which we reproduce from the "Life and Works of Sir Charles Barry"—the effect of which, on the banks of the lake, is so highly successful, may serve as a hint for the production of similar effects in other situations. H. N. H.

Land Formed by Marine Vegetation.—The influence of gregarious marine plants in changing the form and increasing the extent of coast, which is visible in the islands of the Indian Ocean, is especially noticeable on the east coast of Sumatra, on account of the adaptation of the shore in its shape and nature to the propagation and growth of Rhizophoreæ (the Mangroves), as well as by reason of the luxurious growth of vegetation in those regions. The whole coast for miles into the interior presents an unbroken, uninhabitable green flat, and the increase in depth of the water is very gradual, as is usual on the coasts of Indian islands but little above the sea level. The gradual transition from sea to land is very manifest. The earliest evidence of land is the appearance, especially at high tide, of scattered tips of the lower orders of marine plants, projecting above the water like blades of Grass in flooded meadow land. These belong, for the most part, to the Rhizophoreæ, more particularly the genera Rhizophora, Kandelia, Brugniera, and Ceriops, so remarkable for their form and mode of growth. Their favourite habitat is a marshy shore, free from surf, and not flooded at high tide. They are shrubs rather than trees, from 5 to 25 feet high. The seed germinates while attached to the branch, and only separates when the rootlets have penetrated the slimy soil, and the young plant has strength enough to withstand the action of the sea. The stock does not enter the earth, but rather rests upon a mass of roots, spreading out as they approach the ground, and with their ends fixed in it. During flood-tide the tips of the plants only may be visible, but the retiring tide displays the stems and interlacing roots, the latter crowded with mollusks, crustaceans, and fish, left in the slime upon them. This accumulation becomes higher and firmer, and, finally, as coast-land, is better adapted to resist the action of the sea than if the plants had rooted in the soil. With the Rhizophoreæ are found species of similar families; for example, of Ægiceras, Climatandra, and Avicennia. As the sea recedes, and these plants are no longer moistened, even at high tide, they die out, and are succeeded by others of different mode of growth.

THE KITCHEN GARDEN.

THE SHALLOT.

NATIVES of the warmer side of the Mediterranean region, Shallots of course do best in a warm position and in a light, fertile soil. The Shallot is one of our best and most wholesome vegetables, useful alike for soups, salads, and other purposes, and it makes one of our best pickles. It is, in short, in everyday use, both in the kitchen and in the pantry. There are certainly two varieties in cultivation, as will be seen by the illustrations given at page 41, vol. i., and of these the light-coloured one is the kind mostly sought for for culinary purposes, but it is not so heavy a cropper as the dark-coloured Russian variety, and it is also more subject to canker and mildew. The dark hardy Russian kind is a heavy cropper. In order to grow Shallots well, and free from disease, never apply fresh manure to the ground on which they are to be grown. In autumn or early in winter, trench up and ridge a piece of ground for them that has been manured the previous season for some other crop, and fork it over in frosty weather, in order to get it sweet and well pulverised. Level it down, and plant the bulbs in February, but never by any means bury the bulbs too deep, nor plant them in very loose soil, for they are very subject to canker and mildew just when in full growth in May, if damp gets down between their partings or cloves; and on account of these attacks they are almost always scarce and dear. After levelling the ground, stretch a line at distances a foot apart; with one foot tread the ground along the line, only at planting time, from end to end; then just press the bulbs on the surface, and place a pinch of fine cinder ashes on them, to keep worms from them. In March, when the surface becomes dry and mellow, tread between the rows with both feet, so as to make the ground as firm as possible. This will raise the rows of bulbs a little above the general level; then just clear the loose earth away from the bulbs, which will now have pushed forth roots, with a hand or small hoe, so as to allow them, *i. e.*, the bulbs, to stand quite clear of the ground. Thus situated, disease or mildew, or failure, is scarcely possible; on the contrary, good, healthy, sound, firm crops are obtained. Plantations of Shallots may be made in October or March, but late in February or very early in March is the best season, and the crop may be taken up and stored whenever the leaves die down, or, if not then, in autumn. After being well dried, the roots should be hung in nets or laid thinly on shelves, or even hanked in an airy loft, or wherever the Onion crop is stored. J. B.

TARRAGON.

THIS, a native of Siberia, is a very near ally of the Wormwood and Southernwood, though somewhat different in aspect, and very different in odour. It is an important old plant, that one always likes to see a few tufts of in a garden, and it is not at all difficult to grow. It is a hardy herbaceous perennial, but by no means so vigorous on some soils as its relatives before named. We have always noticed it vigorous and healthy on a light, warm soil, or one with thorough drainage, and slow-growing and almost delicate on stiff, clayey ones. It occasionally perishes from severe cold, and probably oftener from too much wet at the root. If we wished to preserve a few stools of it for a long time, we should put it on a slightly raised border under a south wall; but, as in ordinary cultivation such expedients are not resorted to, it is better to give it a well-drained spot in the herb ground, and make a fresh plantation every year, or every second year. It is often surprising to see what a good effect raising the earth from 6 inches to a foot above the level of the spot has upon many things that happen to be a little tender in this climate. We have no doubt that by raising the soil thus, by the aid of a few burrs or stones, Tarragon would do far better on cold, wet soils, where on the ordinary level it is rather delicate. When just coming into bloom is the best time for picking it for placing in vinegar or making Tarragon vinegar, and it should be gathered when quite dry, as also for drying for winter use; but young Tarragon can be obtained most months of the year by pulling the young shoots in April when about 3 inches above ground, with an inch or two of underground shoot or root to them, and planting them 3 inches apart in boxes, pans, or garden pots, and standing them in the shade all the summer. The pots, &c., will get full of roots by autumn, and be in readiness to place in a little heat in succession all the following winter and early spring months, and whilst young and crisp it is in much request in many families. A succession of young fresh shoots is always obtainable out-of-doors by methodically cutting it daily for use, or, if not, cut part of the bed once a fortnight. Tarragon always does best on a sweet, healthy, pulverised soil, and planted in April, by pulling the young shoots with a bit of underground root as above described, and dibbling them in a foot apart each way, the ground will get filled by autumn, when the stems should be cut off when ripe and decaying on the approach of frost. The beds should then be dressed with old decayed Mushroom dung, light decaying old hot-bed linings, or half decayed leaf-mould, about 2 inches deep, in order to secure it from the winter frost; when not thus attended to, I have seen it entirely killed, or very much weakened by severe frost. By having a spot planted in various aspects it may be procured in succession, and very good and young a great part of the season. A hand-glass placed over some on a south border in the early part of the year will start it into early growth. It is liable to canker on wet cold shaded ground, and to be attacked by mildew both at root and branch on shallow hot soils.

JAMES BARNES.

THE HERB GARDEN.

THE culture of herbs is one of those things that are generally neglected, unless a special place is set apart for them. To have a place for everything is the likeliest means of having everything in its place. Form an herb garden, and you are well nigh certain to fill it with plants. Scatter them here, there, and everywhere, and the chances are that "out of sight out of mind" will be speedily verified, and that when the herbs are required they will be found wanting. There is likewise a great saving of time in growing all the herbs together; one always knows where to go for them, and several are mostly wanted together. The herb garden is likewise a pretty feature in itself. A series of beds, say 6 feet long and a yard wide, parted with tiny walks a foot broad, has a neat, orderly appearance. But the chief advantage of having a garden of herbs is that, when disposed thus, they are almost sure to receive the requisite degree of attention. When each has a bed, we like to see each bed filled with healthy plants. Some herbs, such as the Mints, on most soils grow like weeds. Others, such as Fennel and Tarragon, are shy growers, and winter badly in many gardens; others again, such as golden, common, and Lemon Thyme, and especially Penny Royal, require frequent removal. The last should be replanted every autumn. Large plants have their crowns frosted out in winter, and the whole plant frequently perishes. Small rooted pieces from the extremities of the growing shoots planted in October will bear any amount of frost with impunity. Hyssop, Winter Savory, winter Marjoram, and Sage do not need renewal so frequently; and the bitter or strongly aromatic herbs, such as Rue, Horehound, Rosemary, Tansy, Wormwood, &c., are equally hardy, and even longer-lived. Feverfew makes a good edging to the other beds, and Lavender is best grown in the shrubbery. Such large herbs as Angelica and Carraway, and even Borage, should be grown in rows near to Rhubarb, Globe Artichokes, or other strong vegetables. Several beds should likewise be retained for growing such annual herbs as Basil, Marjoram, Savory, Chervil, Purslane, Pot Marigold, &c. Hot or bitter plants for eating green as relishes, or for salads, such as Mustard, Cresses of various kinds, Pimpernel, Chives, green Onions, Radishes, should also be grown in the herb garden. Various plants, such as Curled Mallows, and others for garnishing, might find a place in the herb garden. Parsley is too important a crop to be grown in the herb garden; it does best in deeply-trenched, rich land. Sow in drills 2 feet asunder, or in a single drill, on the verge of other crops. Thin the plants to 6 inches or a foot asunder, and, with liberal culture, one leaf of Parsley will well nigh garnish a ham. Q.

ASPARAGUS CULTURE.

Mr. Barnes' articles on this subject will, I hope, do good. I never pass through Covent Garden in the winter season without, as I look upon this picture and on that, a tingle of shame running through my veins as I compare our own poor spindly Asparagus with the sturdy examples of it which our neighbours the French send us. Why this should be, I cannot tell, except that our system of cultivation is at fault. A friend of mine at Birkenhead, a quarter of a century ago, grew good succulent Asparagus, four sticks of which weighed a pound, and in the early days of Frogmore, Mr. Ingram exhibited forced Asparagus sixteen to eighteen pounds the hundred. I am justified, however, I think, in saying that in neither case was it grown upon the root-pruning and banking-up systems. On the contrary, at Birkenhead, the ground was well manured and thoroughly trenched 2 feet deep, and 18 inches of thoroughly prepared compost was then carted on to it; the Asparagus was sown in single rows a yard apart, and the plants were thinned so as to stand a foot apart in the row. In addition to being mulched with rich manure in the autumn, the only cultivation which these beds received was a slight surface forking in the spring; also a slight sprinkling of salt and guano every fortnight on rainy days in the growing season, and they were kept free from weeds. Compare this with our market-garden treatment, which consists in sticking a sea-side plant on a dry bank, and we need not be surprised that London Asparagus is called "drumsticks," and that few people know the flavour of properly grown Asparagus. The only possible gain derivable from the London system of cultivation is a few days' earlier growth consequent on the daily earthing in of solar heat in the spring, and a little gain also in heat from the action of the sun's rays upon the sides of the beds. This may give a few hundreds of early "natural Grass;" but whether the gain is sufficient to cover the extra expense of cultivation is more than doubtful. Asparagus beds is a cultural misnomer; and where, for early forcing, it may be necessary to form beds, those should always have pigeon-holed repairing walls, so that the necessary heat may be given without the roots of the plants being injured. Thus managed, our forced Asparagus might, in a short time, be as good as that of the French, and of many of our own private gardens; but, as seen in our markets in the winter and early spring, it is simply a disgrace to the country.

A.

Potato Disease—Cause and Effect.—Originality on this subject we thought had been worn out, but, according to a western contemporary—the *Exeter Flying Post*—there is yet something to learn on this interesting national question. A correspondent of that journal (Mr. John Bucksey, 8, St. Petrock's Terrace, Exeter), thus writes:—"I wish to bring under your notice the enclosed Oak galls. They show a mutation they have not shown heretofore. For many years the fly has eaten its way out, leaving a beautifully defined hole, now, on the contrary, the birds have attacked them, and to get the maggot torn the galls. My object is, first, to assert that these galls were not seen in England before the Potato disease, and that till recently birds had not attacked them; secondly, that this fly has been the cause of the Potato disease; thirdly, that the maggots contained in the galls heretofore having been destroyed there can be no flies of the kind this summer. Consequently, we shall have such a crop of Potatoes as we have not seen for twenty-eight years. Kindly put this in your paper, that it may induce others to give it attention and to hand to you for publication the result of their observations." [Oh!]

Tomatoes.—Early Tomatoes are still grown to some extent in New Jersey and Long Island, but each year during the last seven there has been a steady falling off in these districts, owing to the fact that the Tomatoes which are now planted by hundreds of acres around Charleston and Norfolk can be placed in Northern markets six weeks in advance of those produced nearer home, and so it happens that by the time the latter are ripe, even under the most skilful management, prices have fallen to 50 cents a basket at best, and with the probability that the last pickings will have to be sold at 15 cents a basket, or less. This is a very different state of affairs from what prevailed even ten years ago. Then the intelligent Tomato culturist in New Jersey was sure of getting 3 dollars a basket for the first and second week's picking, and wind out the last of the crop at not less than 50 cents a basket. At these prices, the Tomato was one of the most profitable crops for the market gardener, but now he can use his frames, and employ his time more advantageously.—*New York Tribune.*

Horseradish Culture.—Is the plan of growing this by placing a common round drain-tile with it, and set a couple of inches in the earth, filling the tile with fine earth, and planting a set near the top of the tile and 10 inches above the surface, sufficiently well known? Mr. Bradley, at Preston Hall, says it is an admirable plan; digging for the product is saved, and a fine clean stem is the result.

GARDEN DESTROYERS.

TOBACCO POWDER AS AN INSECTICIDE.

Numbers of new remedies for the destruction or prevention of insect pests have lately been introduced, with the merits of some of which I am not yet acquainted. Tobacco, however, in some form or other, has long been recognised as one of the best things for destroying all kinds of aphides, especially out of doors. It is long since I first saw snuff used for destroying both green and black fly. An old enthusiastic gardening friend, who was fond of a pinch of snuff, would often take out his box and dust some of its contents over his insect enemies whenever he saw them on his favourite plants. It was at that time too expensive for general application; but it gave the man who regularly carried a box in his pocket many an opportunity, at this season of the year, of taking signal and prompt vengeance upon his enemies. In destroying insects, the old maxim, "A stitch in time saves nine," holds more than good; for, when aphides have thoroughly established themselves on a plant or tree, it is a difficult matter to destroy them all. If, on the first appearance of insects, a puff of powder is dashed among them, it settles them directly; and a good syringing in three or four hours afterwards washes off both snuff and dead bodies. A man armed with a distributor and a supply of dry powder will in a short time go over a large collection of Roses or a number of wall trees; and, as far as my experience goes, I consider that the use of tobacco powder in the open air is better and cheaper than any dressing which I have hitherto used in a liquid form. It penetrates readily every portion of the tree, carrying destruction in its course; for it is astonishing how soon death ensues after the powder is sprinkled over them. The best time to apply it is when the trees are slightly damp, just before the dew clears off early in the morning; when the trees, however, are thoroughly charged with moisture, I do not think the powder is so effectual. The "distributor" which I use is a bottle-shaped india-rubber apparatus, which is taken in the palm of the hand, and, whenever pressure is applied, the powder is sent flying in a cloud of finely-divided particles in any direction the operator wishes. All nurserymen supply the powder in either small or large quantities.

E. Hobday.

Ramsey Abbey.

Galvanised Wire and Woodlice.—I use my galvanised wire seed guards for a novel purpose. They were originally bought as a protection to seeds from birds, and for this they answered very well, the meshes of the wire being sufficiently small to prevent birds from getting through to eat the seeds. When not in use in that way, I flatten and straighten them, and employ them as flower-pot stands, raising the corners a little above the level of the ground. Wire stands for plants have this advantage over those of a solid character, viz., that air can pass through the meshes. If flower-pots are allowed to stand long in one place, without being moved, damp stagnates under them, and woodlice breed amongst the drainage in the pots. These, if permitted to increase, do great damage to the plants. By using the wire stand, it is obvious that no moisture can accumulate under the pots. When the plants are watered, the superfluous wet runs off through the interstices, which soon become dry. Placing the pots on ashes and sand has been recommended, but galvanised wire is the best remedy. It has afforded me such satisfaction that I also use it for the bottoms of my cold garden frames. The weight of the pots is supported by little wooden stools, which I have had made expressly for this purpose; but where these cannot be had, empty flower-pots turned upside down, placed at the four corners, do very well.—F. H. B., *Camberwell.*

The Upas Tree.—Such a tree certainly exists in Java, but the tales that are told of its poisoning the air for hundreds of yards round, so that birds dare not approach it, that vegetation is destroyed beneath its branches, and that man cannot come near it with impunity, are perfectly ridiculous. To prove their absurdity, a friend of mine climbed up a Upas tree, and passed two hours in its branches, where he took his lunch and smoked a cigar. The tree, however, does contain poison, and the natives extract the sap, with which they rub their spears and kriss blades; wounds inflicted with blades thus anointed are mortal. Such I believe to be the origin of the many fabulous stories that have passed from hand to hand, and from generation to generation, about the Upas tree of Java.—*J. Davidson.*

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—Summer bedding out must now be completed, and injury from frost should be guarded against by means of evergreen boughs, mats, canvas, or other available material. Before filling the beds, have the Grass mown and the edges cut, or, where Box is used as an edging, it should be trimmed. Water well all plants when put out, and, when the planting of each bed is finished, its surface should be loosened or levelled, either with a hoe or rake, so as to give it a neat appearance. Dahlias, Hollyhocks, Gladioli, &c., may be planted nearest the shrubs and dwarfer plants, such as odds and ends from amongst the stock of bedding plants. Annuals and biennials may likewise be effectively employed here and there in front of them, *i.e.*, next the walk. Roses, now coming into bloom, will be benefited by occasional soakings of manure water.

Plant Houses.—In the warmer houses air must be admitted early and the houses shut up soon in the afternoon, shading being employed in all cases on bright days. A moist atmosphere and plenty of water at the root, a moderately high temperature and shade are at present necessary for the production of well developed young leaves and wood; pinching shoots in order to induce a stubby growth, and tying in climbing plants should also be practised. Seedlings and cuttings require potting now and again, an operation to which attention must be paid. Shading must now be used for greenhouses or conservatories, otherwise flowers will quickly shed their petals, and their colours will lose their brightness. All cool houses must be well ventilated, and even at night the sashes may be left a little open, but if the wind is likely to be troublesome, gauze or screen-wire sashes may be used as substitutes for the glass ones.

Reserve Garden for Flowers.—In every place of any considerable size there should be such a spot as this for the purpose of accommodating plants removed from the flower garden to make room for others, for supplying auxiliaries in case of failure, for propagating purposes, and for forwarding young plants. As good keeping in such a place may be questionable, it should be separated from the main garden by means of a hedge; and for this purpose Privet, owing to its rapid growth, answers well; but Beech, Hawthorn, Holly, Yew, and others may be, if necessary, employed for the same purpose, or a wooden fence or brick or stone wall may be used instead of a hedge. The soil, if possible, should be a good sandy loam, well enriched with decayed manure and leaf-mould, peat being likewise serviceable for some things. Bulbous plants removed from spring gardens should be planted here until their bulbs have become properly matured. Daisies, Alyssums, Hepaticas, Ajugas, &c., may likewise be lifted from beds that are to be planted with summer flowering plants, divided, and replanted in the reserve garden, shading them with evergreen boughs, and watering them well for a time. Annuals and biennials intended for seeding purposes should also be planted here, in order that their seeds may be carefully saved. Biennials, as a rule, may now be sown in small beds, either broadcast or in lines, so that they may be transplanted when fit to handle.

Hardy Fruit Garden.—Carefully disbud fruit trees on walls, and stop the strongest shoots, so as to induce an equal distribution of the sap. Pick off and destroy all blistered and curled leaves, and, if necessary, partially thin the fruits. Syringe daily with clean soft water, and if aphides be present, destroy them either by means of tobacco-water or dry powder applied by what is termed a "distributor." Use flowers of sulphur as a preventive of mildew, and fresh white Hellebore powder for the destruction of caterpillars on fruit bushes. Regulate the growth of lately-planted trees, and attend to the training of the shoots of young wall and espalier trees yet in nursery lines.

Kitchen Garden.—The late rains have had a good effect on Cabbages and other vegetables, all of which are now excellent. Cauliflowers under handlights are fit for use, and the supply of Broccoli has not yet become exhausted. Peas, too, are forming pods, and will be in time to take the place of Asparagus. Sow some Broccoli for spring use, and thin or prick out the latest sown Cauliflowers. Plant out Cabbages, Savoys, and Brussels Sprouts in deeply-worked well-manured soil. Tie up Cos Lettuces for blanching, transplant successional crops of them, and sow a few seeds in a moderately cool border. A few seeds of Beans and Peas may also still be sown to keep up a succession. Thin out Cardoons, if sown where they are intended to remain, if not, plant them out, and water them freely. Sow Spinach for succession, in some cool partially shaded position; by sowing it broadcast, and planting it out along with Cauliflower or some similar crop, it will be fit for use in a short time, and may be removed before any injury can be done to other crops. New Zealand Spinach, raised in frames, may now be planted out; in dry, hot, seasons it is a valuable substitute for ordinary Spinach. Thin out Carrots a little, Parsnips, Beet, Turnips, Salsafy, Scorzonera, Onions, &c., and keep them free from weeds, maintaining an open surface amongst them. Earth up Potatoes, Peas, Beans, and Cabbages as they require it. Make occasional sowings of Radishes and small salads, and protect the seeds from birds, by means of wire or other nettings, or by mixing the seeds with red-lead, previously to sowing them. Transplant early spring-sown Leeks in lines from nine inches to a foot apart. Make another sowing of French Beans, and earth up and stake runner sorts. Prepare trenches for Celery, and plant out some of the earliest. Plant out Basil, Marjoram, and other herbs raised in frames. Plant out Tomatoes in warm positions, and also Vegetable Marrows under handlights. Sow Gherkins on warm borders, in lines 4 or 5 feet apart, leaving about 4 or 6 inches between the seeds.

NURSERIES.

All odds and ends in the way of bedding plants may now be placed in frames or pits, and except in the case of the weakest and youngest a cool temperature is sufficient for them. Anything the stock of which is short must be increased, but a sufficient quantity of store plants should be retained. Seedlings of Violas, Pansies, Polyanthuses, Pentstemons, Auriculas, if strong enough, may be planted out for autumn and spring sales. Of Corydalises, Crambe cordifolia, Linum narbonense, Convolvulus althæoides, Althæa cannabina, Aquilegias of different sorts, Phytolacca decandra, Statices, Eucalyptuses, and many other miscellaneous plants raised from seed, should be pricked off into pots or pans in a compost of peat, loam, and leaf-mould, in equal proportions, with a good admixture of sharp sand; a close frame or slightly heated pit is warm enough for them. The general stock of autumn-struck hard-wooded greenhouse plants may now be potted. Cuttings of Heaths, Epacrises, &c., should now be put in, selecting the weakest growths for the purpose. Climbing plants, such as Dipladenias, Echiteses, Allamandas, Passifloras, Bignonias, Cobeas, Aristolochias, where stowed closely together, are apt, now that growth has commenced in earnest, to become intertwined; they must, therefore, be gone over now and then, and tied into proper form. Syringe them well, and also water them freely. Seedlings of Primula japonica should be repotted and set in sheltered places out-of-doors; keep seed-pans containing this Primula in frames until the seed germinates. Rooted cuttings of Vinca oculata should be potted and others shifted; they seldom look well when old. Cuttings of Ixoras, Ficuses, Rhopalas, Cissuses, Passifloras, Aralias, and other plants of similar kinds that are rooted, may be potted singly and still kept within the same frame inside the propagating pit or stove. Dracænas may yet be increased from roots, pieces of the stems, and racemes of flowers fertilised for seed. Such blooms as are produced early in the season are those commonly chosen for this purpose, as they have the full season before them for the maturation of their berries. Plants bearing seed should be elevated on inverted pots in a sunny part of the house, where their large clusters of red berries are extremely pretty. Alocasias, such as Lowii, metallica, and others, may be plunged in bottom heat, and have their crowns taken off for cuttings; shoots afterwards produced will also prove useful for the same purpose. Young plants of Caladiums in small pots should be shifted before the roots become cramped. Achimenes, if potted, may be propagated just like Verbenas, if the stock of them is short; where the roots have not yet been planted, they will be pushing young shoots, so that they had better be planted now as soon as possible. Pot off seedling Begonias, repot those raised from leaves last summer, and start into growth all dormant stools. Cuttings of Pereskia should be potted singly, Cacti may also be well watered, and increased by means of cuttings, offsets, or grafts. Place Epiphyllums in a moist, warm temperature, to form fresh growth; and set the several hardier kinds of Cacti, Aloes, and other succulents, in light and airy houses, or out of doors as soon as all danger from frost is over. Gladioli in pots may likewise be plunged in ashes out of doors, and such as are unsold may afterwards be turned out of their pots and planted in a rich border. Old plants of Chrysanthemums should be plunged out of doors in ashes, and young ones set in frames. Pot Hollyhock seedlings, and plant out cuttings of them when rooted. From Agaves and Yuccas remove the suckers; pot them in good loam and keep them for a time in a close pit. Marantas, such as tubispatha, and Alocasias, such as Jenningsii, should be divided, repotted, and started in a brisk heat. Place young plants of Tillandsia Lindenii that are in small pots inside of others two sizes larger, filling up the empty space with sphagnum. Palm seedlings still in the boxes should be potted singly and kept rather close for a time. Peg down the shoots of Sonerila margaritacea, so that they may root at the joints, and eventually be separated and potted singly. The variegated Pandanuses, such as javanicus and Veitchii, produce shoots around their necks in abundance, and the more these are taken off for cuttings, the more the plants produce shoots, which when some inches long should be removed with a heel, and inserted singly in pots, which should be plunged in bottom heat under a handlight.

SOCIETIES, EXHIBITIONS, &c.

ALEXANDRA PARK.

On last Saturday, the 24th inst., the great inaugural flower-show was held here, under happy conditions. The weather was as fine as could have been desired, a pleasant breeze blowing over the hill. The effect of the plants arranged along the nave of the Palace, well broken up as they were by tall Palms, Tree Ferns, &c., was very good. Indeed, we have never seen better evidence of the importance of such plants than was afforded by the plant-stages as seen from the galleries and various other points. Out of doors there were also great attractions, the clear day permitting the wide and beautiful views commanded by the palace on every side to be seen to full advantage.

Stove and Greenhouse Plants.— As a rule these were of superior merit, being large, well grown, and profusely flowered. In the class of sixteen distinct kinds, Mr. Baines was first, with excellent plants of Aphelexis macrantha rosea and purpurea, Azaleas, Sir Charles Napier, Iveryana and Stella; Dracophyllum gracile, Eriostemon neriifolium and E. cuspidatum, Boronia pinnata, Erica Cavendishii, E. tricolor Wilsoni, and E. ventricosa coccinea minor; Franciscea confertiflora, Anthurium Scherzerianum, Dipladenia amabilis, and Ixora coccinea. Mr. Donald, Leyton, was second, with a fine group, consisting of Azaleas, Heaths, a fine specimen of Pimelea Hendersonii, Polygala Dalmaisiana, Clerodendron Balfourii, and others. Mr. G. Wheeler, Regent's Park, was third. In the nurserymen's class of twelve plants, Messrs. Jackson and Sons, Kingston, were first, with very fine specimens, including a massive plant of Erica depressa multiflora, Acrophyllum venustum, Bougainvillea glabra, Rhododendron Gibsonii, a magnificently bloomed Stephanotis floribunda, and others; Mr. B. S. Williams was second, with a wonderfully fine group, containing, amongst others, a finely bloomed plant of Allamanda grandiflora; and Mr. W. Cutbush, Barnet, was third, with good plants, particularly a nice specimen of Gompholobium polymorphum splendens. In the amateurs' class of ten plants, Mr. Ward, Leyton, was first, with extremely well-grown specimens, amongst which were a magnificent Statice profusa, a fine plant of Adenandra fragrans, and an excellent example of Genetyllis Hookeri. Mr. Johnson exhibited a good half dozen specimens, conspicuous among which were Bougainvillea glabra and Pimelea amabilis. In the nurserymen's class of half a dozen specimens, Mr. W. E. Dixon, Norwood Nursery, Beverley, was first, and Mr. G. Cooper, Derby, second. For the finest stove or greenhouse plant in flower, Mr. Baines was first, with a huge specimen of Hedaroma tulipiferum laden with flowers; Mr. Donald also showed a massive Epacris called Eclipse. For twelve fine-foliaged plants, Mr. Baines was first, with a wonderfully fine group, in which were immense plants of Sarracenia flava and of another variety of the same type, a large tubful of Sarracenia purpurea, fine specimens of Theophrasta imperialis, Crotons, Ferns, Palms, &c. The other successful competitors were Messrs. Wheeler, Tinzley, and Hill. Mr. B. S. Williams was first in the class of eight fine-foliaged plants, with fine specimens of Livistona borbonica, Chamærops humilis, Croton variegatum, Yucca aloifolia variegata, Dasylirion plumosum, Encephalartos latifrons, Theophrasta imperialis, and Gleichenia semi-vestita. Mr. W. E. Dixon was second, and Mr. W. Cutbush third. For sixteen specimens—eight foliage and eight flowering—Mr. G. Cooper was first, with fine specimens, including heaths, Azaleas, Hedaromas, Acrophyllum venustum, Palms, particularly a plant of Phœnicophorium Seychellarum, and others. In Mr. B. S. Williams' group, which was second, there were, amongst others, large plants of Pandanus reflexus and Cycas revoluta. Mr. W. E. Dixon was third.

New Plants.—Of these, prizes were offered for a dozen sent out in 1871-3, and also for half a dozen, the competitors in the one class being prevented from competing in the other. For twelve plants Messrs. Veitch and Sons were first with Masdevallia Harryana, bearing six flowers, Odontoglossum vexillarium, Maranta Makoyana, the fine Aralia Veitchii, Dracæna imperialis and magnifica, Pandanus Veitchii, Paulinia thalictrifolia, Cypripedium Dominianum, Dieffenbachia Bausei, Kentia Forsteriana, and Croton Weismannii. Mr. B. S. Williams was second, with plants of the handsome Anthurium crystallinum, Dracæna Fraserii and metallica, Ixora Colei. Phyllotænium Lindeni, Dæmonorops palembanicus, Cyrtodeira fulgida, and others. Messrs. Rollisson and Sons were third, with Davallia Tyermanii, Veitchia Canterburyana, Dracæna lentiginosa, Pteris serrulata Applebyana, Sempervivum spinosum, and others similar to kinds already named. Mr. W. E. Dixon showed half a dozen nice plants, for which a first prize was awarded.

Orchids.—In the amateurs' class of a dozen plants, Mr. Cuthbert, Chase Park, Enfield, was first with a fine group consisting of Cattleya Mossiæ, Oncidium ampliatum majus, Odontoglossum Alexandræ (three varieties), O. Pescatorei, Thunia Bensoniæ, bearing seven fine heads of bloom; Anguloa Clowesii, Vanda tricolor, Phalænopsis Luddemaniana, Cœlogyne pandurata, and a fine specimen of Lycaste cruenta. Mr. G. Wheeler was second. In the nurserymen's class of ten plants, Mr. B. S. Williams was first, with a splendid group, comprising Calanthe veratrifolia with ten flower-spikes, Cypripedum villosum, barbatum majus, and caudatum, Aërides Fieldingii, a beautiful variety of Lælia purpurata with four flower spikes, Dendrobium Farmerii bearing five good spikes of bloom, two varieties of Vanda tricolor, and a fine example of Saccolabium retusum with four flower spikes. Messrs. Jackson and Son were second with a group of fine plants, particularly one of Dendrobium infundibulum. Messrs. Veitch and Sons exhibited a miscellaneous group of Orchids, which formed in themselves one of the most interesting features of the exhibition. Amongst them were different varieties of Odontoglossum Alexandræ, a finely-flowered plant of Aërides Fieldingii, Cypripediums of different kinds, particularly C. Lowii, Veitchii, caudatum, Dominii, Stonei, and its variety platytænium, the last an exquisite kind raised by Mr. Day, of Tottenham. The same collection also contained plants of Masdevallia Harryana, Anguloa Clowesii, Ruckerii, and uniflora superba, a deeply-spotted variety of Odontoglossum nebulosum, and a plant of the lovely O. vexillarium with four flower spikes, three of which bore two flowers each, and another one four flowers; a little plant of Utricularia montana, a nicely-bloomed example of Dendrobium crystallinum, and one of D. Devonianum with some five dozen blooms on a spike. In addition to these there were also plants of Colax jugosus, Saccolabium curvifolium, Phalænopsis grandiflora, and the little P. Parishii, various Trichopilias, and similar plants.

Palms.—These, as a rule, were excellent. Mr. B. S. Williams, Messrs. Rollisson, and Messrs. Jackson were the most successful exhibitors of them; in the amateurs' class of three kinds, Mr. Douglas, Wornersley House, was first, with good examples of Latania borbonica, Hyophorbe Verschaffeltii, and Pritchardia Martii; Mr. G. Wheeler was second.

Cycads, Pandanuses, Dracænas, Yuccas, Crotons.—Mr. W. E. Dixon was first for Cycads, with good plants of Encephalartos Lehmanni, trispinosus, Ghellinckii, and villosus, Cycas revoluta, and Dion edule; Mr. B. S. Williams was second, with a somewhat similar group. Mr. Williams and Messrs. Rollisson also competed in the class confined to a pair of Cycads. With a pair of Pandanuses Mr. G. Cooper was first, with two fine specimens of P. utilis. Mr. Williams, Messrs. Rollisson, Mr. Wheeler, and Mr. J. Douglas contributed good specimens of Dracænas, some of which were unusually tall and were surmounted by a fine tuft of leaves. Mr. Williams was also first in the class of ten Dracænas and Cordylines, with some good specimens of the green-leaved kinds. He was likewise first for a pair of Yuccas, and also for a pair of Beaucarneas. In the amateurs' class for the best pair of Crotons, Mr. S. Johnson was first, with specimens of C. pictum and variegatum; and Mr. G. Cooper occupied a similar position in the nurserymen's class with C. angustifolium and variegatum.

Ferns.—These were well represented. In the amateurs' class of twelve kinds, Mr. Baines was first, with grand masses of Davallia bullata and dissecta, Todea superba, Gleichenia Speluncæ and rupestris, Lomaria gibba and cycadæfolia, Cibotium princeps, Cyathea dealbata and medullaris, Dicksonia antarctica, and D. squarrosa. J. M. Shuttleworth, Esq., was second, Mr. Donald third, and Mr. W. Cuthbert fourth. In the nurserymen's class, Mr. B. S. Williams was first, with good specimens of Platycerium grande and alcicorne, Todea intermedia and africana, Adiantum Farleyense, Gleichenia flabellata, Cibotium regale, and others. Mr. W. E. Dixon was second, with a good group, conspicuous in which was a fine plant of Adiantum Farleyense. In the class of six specimens, Mr. Shuttleworth was first, Mr. S. Johnson second, and Mr. G. Wheeler third. Mr. Shuttleworth was likewise first for six specimens of Gleichenias, and also for twenty-four kinds of hardy Ferns, a class in which Messrs. Jackson were second. For half a dozen specimens of Adiantums, Mr. Douglas was the most successful exhibitor, with good examples of tenerum, cuneatum, concinnum latum, formosum, macrophyllum, and trapeziforme. Mr. B. S. Williams was first, for the finest Tree Fern, with a noble plant of Dicksonia antarctica, having a trunk nearly 2 feet through, surmounted by a noble head of fine fronds; Messrs. Rollisson also received a first prize for a splendid specimen of Cyathea medullaris, the trunk of which was some 10 inches in diameter. Messrs. Jackson were likewise contributors of Tree Ferns.

Heaths.—These consisted chiefly of kinds alluded to in previous reports. In the amateur's class of eight specimens, Mr. Ward was first with Erica Candolleana, Cavendishii, ventricosa magnifica, v. coccinea, tricolor elegans, t. impressa, candidissima, and eximia superba. Mr. G. Wheeler was second. In the nurserymen's class of eight kinds, Messrs. Jackson were first, with fine specimens of E. depressa, tricolor speciosa, t. Wilsoni, t. superba, favoides elegans, affinis, Victoria, and ventricosa coccinea minor. Mr. B. S. Williams was second in this class.

Agaves.—Of these good groups were exhibited, consisting of plants of medium size. Mr. Croucher, gardener to J. T. Peacock, Esq., was first in the amateur's class of ten plants, and Dr. Kellock, Stamford Hill, second. Mr. B. S. Williams was first in the nurserymen's class, with a fine group, including Agave potatorum, filifera densa, Regeli latifolia, geminiflora filifera, Verschaffeltii, densiflora, Ghiesbreghtii obscura, applanata, &c.

Orange Trees, Rhododendrons, and Azaleas.—Mr. B. S. Williams showed a good Orange tree, and specimens of Rhododendrons, other groups of which were likewise exhibited. In the class of half a dozen Azaleas in flower, Mr. G. Wheeler was first in the amateurs' class, and Messrs. Jackson in the nurserymen's with Duc de Nassau, Criterion, Roi Leopold, variegata, Sir C. Napier, and Alexander II. Mr. C. Turner, of Slough, was second. Mr. Turner was first for six standard Azaleas, with some very finely flowered plants, and likewise first in the nurserymen's class for fifteen distinct kinds, with small but well bloomed plants.

Roses, Laurustinuses, and Bays.—Of these some good specimens were exhibited. In the class of twelve Roses in pots, Messrs. Paul & Son were first, with remarkably fine plants, among which were Duke of Edinburgh, Madame Margottin, Anna Alexieff, President, Camille Bernardin, Marechal Vaillant, Charles Lawson, Souvenir d'un Ami, Madame Villermoz, Madame Victor Verdier, Victor Verdier, and Paul Verdier; Mr. Turner was second, with a very fine dozen of Roses, and first for twenty distinct kinds; Messrs Paul & Son being second. Messrs. Paul & Son likewise exhibited a large group of cut blooms, all remarkably large, fresh, and fine;

and Mr. Soder, Brentwood Lodge, showed a stand of blooms of Marechal Niel. Mr. Turner showed a pair of standard Laurustinuses, and Messrs. Veitch & Sons, and Mr. B. S. Williams, pairs of very fine Bay trees, for which they received first and second prizes respectively.

Pelargoniums and Calceolarias.—Both these were remarkably fine. In the nurserymen's class of eight show Pelargoniums, Messrs. Dobson were first, and Mr. Ward occupied a similar position in the amateurs' class, with huge plants trained on the flat principle, some 4 feet or more in diameter and a sheet of bloom; Mr. Weir, the Elms, Hampstead, was second, and Mr. James, Isleworth, third. Messrs. Dobson were first in the nurserymen's class for six fancy Pelargoniums, and Mr. Weir and Mr. James first and second respectively in the amateurs' class. For half a dozen herbaceous Calceolarias, Mr. James was first and Messrs. Dobson second. Messrs. Dobson showed a good miscellaneous collection of Calceolarias.

Herbaceous Plants.—In the class of twenty-four of these in pots, Mr. Ware was first, with a good collection, in which, amongst others, were Thermopsis Caroliniana, Cheiranthus Delayhanus, Aquilegia aurea, Anthericum Liliastrum, and Linum flavum. Mr. Ware likewise contributed two extensive groups of hardy plants and succulents arranged for effect, for which he was awarded an extra prize. Collections of Pansies, both English and fancy kinds, were likewise furnished by Mr. Ware, conspicuous amongst them being a stand of the very dark velvety kind called Pluto. Messrs. Downie, Laird, and Laing furnished a collection of fancy Pansies, consisting of many fine seedlings and named sorts. Of English Pansies the same firm also sent some fine examples, and also a basketful of their fine new bedding Pansy, Blue King. Mr. Hooper, Bath, likewise exhibited some splendid blooms of fancy and English Pansies. Mr. B. S. Williams showed a basketful of his new bedding Viola cornuta, named Sensation, of which we have already spoken in favourable terms.

Miscellaneous Plants.—Messrs. Veitch exhibited a group of fine small plants, including several varieties of the Japanese Maples; Tillandsia Zahnii, with its yellow flower-spikes and dull crimson leaves tipped with green; the handsome Anthurium crystallinum; and that prettiest of all Aralias—A. Veitchii, with its charming whorls of narrow undulated brown leaves. In this group were also good plants of the Adiantum-like Paullinia thalictrifolia, the curiously variegated Maranta Makoyana, a superb plant of Cocos Weddelliana, with long, graceful, and beautifully arched fronds, and other plants. Messrs. Downie, Laird, & Laing showed a group of plants, among which were the red-veined Ficus Cooperii, F. Chauverii, different kinds of Caladiums, Pandanuses, Ferns, Palms, an excellent plant of Dieffenbachia Bausei, variegated Yuccas, &c.; and also a group of zonal Pelargoniums, amongst which Mrs. F. Weir, Black Douglas, Marechal MacMahon, Earl Rosslyn, Imperatice Eugenie, and Princess of Wales were particularly fine. Mr. Ware showed a group of Succulents, and Messrs. J. Verschaffelt, Belgium, a basketful of Pæonies. From Messrs. Rollisson came a large group of plants, including some new kinds of Crotons, variegated Pine-apple plants, Pandanus ornatus and Vandermeershii, Alocasia zebrina, and several fine varieties of Ferns. Mr. B. S. Williams contributed a large and varied collection of miscellaneous plants, containing, amongst others, Adiantum Alexandræ, one of the finest leaved of all the Maiden-hair Ferns; the prettily variegated Habrothamnus Hawkshawianus, several fine examples of Anæctochiluses, Masdevallia Lindeni, Cattleya Mendelii, Palms, Ferns, Dracænas, Succulents, Bouvardias, and many variegated-leaved plants. Half a dozen of Clematis plants on trellises were shown by Mr. Cutbush, and Mr. J. Dinsmore, the Cedars, Harrow-road, exhibited half a dozen fine pyramidal plants of Mignonette, for which he was awarded an extra prize. Mr. C. Turner contributed a group of Azaleas and some plants of Primula japonica.

Window Boxes, Plant Cases, &c.—For a plant case for the drawing-room, furnished with suitable plants, Miss Annie Williams was first, with a nice plain Wardian case, in which were effectively arranged Dracænas, Caladiums, Coleuses, Begonias, Ferns, &c., under which was a carpet of dwarf Selaginella. Messrs. Dick Radcliffe & Co. contributed a tastefully planted window jardinet. Miss Williams had the best window-box; it was tastefully filled with Calceolarias, Ivy-leaved and other Pelargoniums. Cannas, Lobelias, Petunias, &c.; at the back was low wire netting, on which Ivy and similar plants were trained, and in front Ivy-leaved Pelargoniums, Petunias, &c., were effectively spread out on a drooping ledge of wire netting, which almost hid the box. Mr. J. Russell was second, and Messrs. Dick Radcliffe & Co. third. For three garden vases for conservatory decoration, effectively planted, Messrs. Rollisson were first; in the centre vase was a little plant of Livistona borbonica, and the two outside ones each contained small specimens of variegated Yuccas. Arranged round these were little plants of Fuchsias, Cytisuses, Azaleas, Ferns, and other plants. Miss Williams was second, and Messrs. Dick Radcliffe & Co. were third.

Table Decorations.—For sets of three pieces, ornamented with flowers, Miss A. Hassard was first, with tastefully arranged glass stands, furnished with Stephanotis, Gardenias, Spiræas, Schizostylis coccinea, Ferns, blooms of Cacti, &c. Mrs. Fenn, Lea Bridge-road, was second, and Mr. Chard third. For two flower-stands for the drawing-room table, Mr. Burley was first, with tastefully furnished stands, in which runners of the Mother of Thousands Saxifrage suspended from the top dishes had a charming appearance. Miss E. Blair was second, and Miss Mackenzie was third. Messrs. Adcock and Co., 3 & 4, Princes-street, exhibited a collection of artificial flowers.

Bouquets.—These were not so good as might have been expected. Wedding bouquets consisted chiefly of choice white and sweet-scented flowers, sparsely relieved with small Fern fronds. That to which the first prize was awarded was exhibited by Miss Edwards, Balham; it was some 14 inches in diameter; the second came from Mr. Yates, Manchester, and the third from Mr. Chard, Clarendon Park. For three bouquets for balls Mr. Burley was first with well made bouquets of a nice size; Mr. Yates was second, and Miss Williams third.

Fruit.—Some good fruit was exhibited, particularly Pines, Grapes, and Strawberries. For the best three Pines of any sort, Mr. D. Wilson, gardener to Earl Fortescue, Castle Hill, Devon, was first with three well-ripened, smooth-leaved Cayennes, and likewise for the best single fruit of a smooth-leaved Cayenne. The best single fruit of any other sort was exhibited by Mr. G. Tillyard, Brocklesby Park, Lincoln, who also exhibited a specimen of Oat's Seedling Pine. The finest two bunches of black Hamburgh Grapes were shown by Mr. W. Bones, Havering Park, Romford; they were large, well-set, and ripened, and the berries plump and capitally coloured. Those from Mr. T. Bannerman, Blithfield Hall, Rugeley, Staffordshire, that were second, and likewise those from Mr. Bennett and Mr. Miles, which received equal thirds, were also exceptionally good. For three bunches of any white Grape, Mr. D. Wilson was first with remarkably fine and well-finished bunches of Foster's White Seedling; and Mr. Bones was second with good clusters of Golden Hamburgh. For the best single bunch of any white Grape, Mr. T. Miles was first, with a fine bunch of Buckland Sweetwater; and for the best single bunch of any black Grape Mr. T. Bannerman was first, with a fine cluster of Black Hamburgh; Mr. Bones was second, and Mr. D. Wilson third with the same sort. Peaches were good, of fair size, and well ripened; the successful competitors for these were Mr. Harris, Mr. Sage, and Mr. W. Gardiner; the last-named exhibitor likewise showed a dish of fine Violet Hative Nectarines. For a dish of Figs, Mr. Miles was first with half a dozen fruits of Brown Ischia, and Mr. Wilson second. For two kinds of Strawberries, and twenty-five fruits of each, Mr. T. D. Irving was first, with Sir C. Napier and Lucus. The same exhibitor was likewise first in another class for twenty-five fruits, with very fine samples of Lucus; Mr. J. Lane, of Pyrgo Park, being second, with excellent fruits of President, and likewise first, with the same sort, in the class for six pots of Strawberries in fruit. In the classes for thirty fruits of any black, and the same of any white, sort of Cherry, Mr. Miles was the only exhibitor; but his dishes of both kinds—viz., Elton and Black Circassian—were extremely fine, and well merited the first prizes that were awarded them. Messrs. Munro and Wilkinson, Potter's Bar, showed three samples of their Little Heath Melon, which received a first prize; the second being awarded for samples of May Queen and Tower Hybrid Melons. Two brace of the Marquis of Lorne Cucumber, about 20 inches in length, straight, fresh, and green, were shown by Mr. Bennett, Hatfield House, Herts. Home-grown fruits of the Japanese Loquat were exhibited by J. Blythe, Esq., Woolhampton, Berks; and a good collection of Apples, in an excellent state of preservation, came from Mr. W. Gardiner, Lower Eatington Park, Stratford-on-Avon. In this group, amongst others, we noticed the old Leathercoat Russet, Golden Pippin, Gorse Hill, Easter Pippin, Sturmer Pippin, Hanwell Souring, and Royal Russet.

COVENT GARDEN MARKET.

May 30th.

Home-grown fruits, such as Melons, Cucumbers, Grapes, Pines, Peaches, Nectarines, Strawberries, &c., are of excellent quality, as are also imported produce. Vegetables are unusually fine this season, and realise good prices.

Prices of Fruits.—Apples, per doz., 2s. to 3s.; Apricots, 2s. to 3s. per doz.; Cobs, per lb., 2s. to 2s. 6d.; Cherries, per box, 2s. to 4s.; Gooseberries, per quart, 3d. to 6d.; Grapes, hothouse, per lb., 6s. to 15s.; Lemons, per 100, 6s. to 10s.; Oranges, per 100, 6s. to 12s.; Peaches, per doz., 18s. to 36s.; Pears, kitchen, per doz., 1s. to 3s.; dessert, per doz., 6s. to 18s.; Pine-Apples, per lb., 8s. to 12s.; Strawberries, per oz., 6d. to 1s. 3d.; Walnuts, per bushel, 15s. to 30s.; ditto, per 100, 2s. to 2s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 3s. to 6s.; French, 4s. to 12s.; Beans, Kidney, per 100, 1s. 6d. to 2s. 6d.; Beet, Red, per doz., 1s. to 3s.; Broccoli, each, 6d. to 9d.; Cabbage, per doz., 1s. 6d. to 2s.; Carrots, per bunch, young, 1s. 6d., old do., 8d.; Cauliflower, spring, per doz., 8s. to 12s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 2s. 6d. to 4s.; Cucumbers, each, 4d. to 1s. 3d.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 2d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 8s. to 12s.; button, per quart, 1s.; Parsley, per doz. bunches, 6s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 3s. to 5s.; Potatoes, per bushel, 5s. to 10s.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Savoys, per doz., 2s. to 3s.; Scorzonera, per bundle, 1s.; Shallots, per lb., 8d.; Spinach, per bushel, 3s. 6d. to 5s.; Turnips, old, per bunch, 6d., young do. 2s.

ANSWERS TO CORRESPONDENTS.

Names of Plants (Strathallan.)—Lonicera Ledebourii.——(R. T. S.)—Probably Spiræa Lindleyana or ariæfolia, and Purple Beech——(Frederick.)—1. Scilla nutans alba; 2. Statice Armeria rosea; 3. Clematis montana; 4. Corchorus japonicus; 5. Bignonia jasminoides; 6. Bignonia capreolata; 7. Aconitum Napellus; 8. Berberis Darwinii; 9. Juniperus sphærica.——(Chilham.)—Aotus gracillima, a West Australian greenhouse shrub, requiring the same treatment as an Acacia, and the Cape Pelargonium tricolor.——(A Lover of Ferns.)—1. Pteris serrulata, var. cristata: 2. Pteris, indeterminable: 3. Adiantum cuneatum; 4. Adiantum, apparently Capillus Veneris; 5. Asplenium flaccidum (sterile frond); 6. Adiantum affine; 7. Same as 5, but a fertile frond; 8. Asplenium Colenso (sterile frond); 9. Pteris cretica; 10. Cyrtomium falcatum; 11. Same as 9, but a fertile frond; 12. Pteris serrulata; 13. Pteris argyrea——Plant Barrows (J.R.)—Trucks with two, three, and four wheels, are better than hand-barrows for conveying plants from one place to another. You will find a useful one for ordinary purposes figured in p. 376, No. 137, of M'Intosh's "Book of the Garden."——Propagation (M. R.)—Funkia ovata may be increased by dividing the roots, the yellow Alyssum by means of seeds. Pansies next week.

THE GARDEN.

> "This is an art
> Which does mend nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

FLOWERS FOR THE POOR AND THE SICK.

There is at present in many directions a strong movement for giving plants and flowers to the poor in their homes and hospitals. On reading appeals for supplies of flowers I am struck by the omission of demands for winter flowers, it is always for summer; sometimes spring and autumn are included, but one would think that infirmary wards were empty in winter, that disease and death were not so rampant at that season, and flowers were not needful to help to purify the close rooms in the long dark nights. The present is a good time to make provision for winter flowers for the sick, and allow me to explain that in my limited experience among the town poor, anything green is considered a flower, and any flower is a rose. There is no garden so small that it cannot hold a few plants of Thyme and a bush of Rosemary; nor is the stock in any private garden large enough to supply even one district or hospital with these two wholesome aromatic plants. I would include Lavender, but it must be saved in winter for its flowers in autumn. A "beautiful smell" is more prized by the poor than even a beautiful sight. The prejudice against flowers in sleeping rooms is many degrees stronger among the upper classes than among the poor. I pass along to my own room and see the flower-glasses of my friends carefully set outside their doors, or on the window sills for the night, "no sleep and a headache in the morning" being asserted as the certain consequence of sleeping in the vicinity of any and all vegetables. In my own room there are plenty of the flowers in season at the time, and below the window there is a hedge of Sweetbriar, and Honeysuckle, and a border of Stocks, Mignonette, Sweet Peas, Lupins, and common Roses, a bush or two of Lilac, and not far off a fine Sweet Bay; thus I cannot escape the smell of flowers, and yet have lived half a century in ignorance of headaches and sleepless nights.

To resume: Growing a market-garden supply of Thyme and Rosemary for our winter beds, we have been in the practice in spring, when these plants are removed, and after our own supplies for the next winter are taken up and laid by, to distribute what we can spare. We could not supply pots for such a number, nor would the additional weight have been convenient for our benevolent kinswomen who distributed the plants at their "mothers' meetings." We, therefore, selected the most retentive soil there is on our light ground, and kneaded it around each clump. This answered the purpose perfectly, and did not offer the temptation of selling the pot. It occurred to me this winter that we should not wait until spring to give plants, but that a whiff of health and pleasure might be administered, by sending cut Thyme and Rosemary to the Royal Infirmary, made up in little bunches, with one Christmas Rose or two or three Snowdrops in each. Our kinswomen were again only too happy to distribute weekly these flowers through the wards open to visitors. Our many dozens (now amounting to hundreds) went but a little way, alas! but the pleasure they gave cannot be told. From Snowdrops we progressed through Heath (herbacea and carnea præcox), Crocuses, dwarf Daffodils, Grape Hyacinths, Arabis, Polyanthuses, white and red Ribes (one raceme sufficient for each), Stocks that had stood the winter (one head gave colour), Laurustinus, Sweet Briar, Spearmint, and Balm, until the month of May, when everybody can help easily with the host of spring flowers. But, however ample supplies from this garden may become (we sent 400 one day), two points will be all-important—1, that every nosegay, be it no larger than a "button-hole," shall have a sprig of a woody, aromatic plant, that does not require to be kept in water to remain alive and sweet, that will neither stain nor litter the bed, that can be crushed under the pillow and sniffed at through the long night, and be still pure and sweet in the morning, and, like Lavender when thrown away into the fire, will, "e'en in its ashes, live its wonted" fragrance—as Rosemary, Sweet Bay, Thyme, Lavender, Southernwood. I name them in perhaps their most useful order. Point No. 2 is, that all flowers should have been at least an hour in water before being sent away. Unpractised people have a notion that flowers fresh from the garden must be best, and are suspicious of those that they feel have been in water. All who work practically with cut flowers know that this is an utter mistake. Even in cool weather, flowers sent from here (20 minutes) to Edinburgh would arrive limp and short-lived if fresh from the garden, but crisp and firm had they been placed in water for a time. One cannot expect in a hospital that each patient is to be provided with a little mug of water to hold the flowers; there may be one general dish in the ward, where all the little bunches are put. I do not know as to this, therefore I would secure the dry, clean sprig, that entails no trouble to the nurse, nor gives grounds for complaint of wet or mess. I have heard frequently philanthropic people say that we ought to give our best flowers to the sick poor, that there ought to be no grudging where gifts to the poor are concerned; by best, these talkers mean scarce and rare flowers, the actual value of which (not to speak of the cost in growing and keeping them) would have gone far to provide food and fuel for those who, for want of these, have been struck down with sickness and are inmates of the infirmary; and what healthy associations can the poor have with hothouse or rare border flowers? Why should they not be considered, and have the strong-smelling herbs and the flowers they know, and to which some memory may be attached? A memory is a fact, not a sentiment, and sentimental people would thus deprive the poor of their own simple associations. In our ugly and utilitarian Kale yards, there is almost always (and for it only) still room for a bush of Southernwood. I am glad to see it, and again I repeat, Why should the infirmary sick (people often from the country) be deprived of the sprig of "Old Man," with possibly its Sunday memories, because we are accustomed to more "refined" plants and smells?

All sorts of Mints, Costmary, Balm, and pot herbs are prized and preferred. We had lines and plots of these prepared in early spring, to save the Thyme for winter. Sweet Briar we put into the centre of the bunch (or fold a leaf of Sweet Bay sprig round the stalk) to protect the poor sickly hand from the prickles; the topmost spines are too soft to hurt the nose. A long branch of Rosemary. half a yard long, may be cut into lengths, but see that the stalk is cut down close to the topmost pair of shoots in each length, so as to guard against sharp points. Worsted makes the best tying material; short ends and old unravellings that would be wasted, are yet strong enough for these little bunches. They must be firmly tied; yet not too tight, else, if put into water, the stalks cannot benefit, although worsted is a safeguard there.

A handful of earth seems a thing to be had anywhere. Arthur's Seat is ten minutes' distance from the Cowgate, but for all that mould cannot always be got by the poor in garret and cellar. For such contingencies I would suggest a bunch of Spearmint, which will grow and root in water. An additional motive would be, that a top, or two or three leaves, might give a flavour to some little mess that may be sometimes procured. Failing earth and water, I would still urge having a plant, and Houseleeks and Stonecrops, if there is a skylight or window at all, would live on nothing. Here again there might be a combination of use with the pleasure of having the plant. A leaf of Houseleek (Semp. tectorum) is a sure allayer of inflammation and "ills" that feet "are heir to." I have sent by post leaves to those who could not afford themselves the relief of a chiropodist, and have been told that they assuaged the pain as nothing else did.

The plants I have named can all bear crushing. A hamper of Rosemary and Thyme, Houseleeks, and Sedums from the country could be tightly packed, and arrive not a bit the worse, even if delayed on the road. I hope these suggestions may be followed up by some of your readers. For ourselves, we intend to make winter our "supreme effort," and hope to be methodical, and use foresight in carrying our plans out. In summer there are always country friends now and again coming in and bringing a nosegay with them for the poor inmates of the infirmary, and bunches come from the market then also occasionally. F. J. Hope.

Wardie Lodge, Edinburgh, May, 1873.

NOTES OF THE WEEK.

—— It is not only the Alps of Europe that are brightened with numerous beautiful plants of the Pink and Catchfly tribes. One of the handsomest plants of this kind that we have seen for a long time is a Californian species named Bolander's Catchfly (Silene Bolanderi), of which fine specimens were shown at Kensington last Wednesday. It is a dwarf rose-coloured kind, introduced by Mr. William Thompson, of Ipswich.

—— The kingdom of double flowers is rapidly extending, for better or for worse. Our old friend Lobelia pumila grandiflora is the last subject. It was to be seen in a double form, last Wednesday, at South Kensington.

—— At the Show at Kensington, on Wednesday last, there were some artificial plants and flowers exhibited, so well done that many did not at first think them to be anything but natural products. They were exhibited by Messrs. Adcock, Princes Street, Cavendish Square.

—— In the nurseries of Messrs. Backhouse and Son, at York, the curious "Spatlum," or "Bitter Root" (Lewisia rediviva), is now showing flower freely. A description of this remarkable and handsome plant, with an illustration, will be found at page 701, Vol. I. of The Garden.

—— Referring to our last week's note on the Chlorococcum, our contributor desires us to correct an error into which he was led by an imperfect knowledge of the locality. The church to which our correspondent refers is St. Stephen's, Hampstead, and not the church at Camden Town.

—— Tuesday next is, we understand, the last day on which tickets for the great show of the Royal Horticultural Society at Bath can be purchased in quantities at the reduced scale. It is reported that an application has been made by one firm in the neighbourhood of Bath, for 3,300 tickets, to be distributed among its *employés*. Let us hope that this example will also be followed by others.

—— A microscopical *soirée* will be held at Bath during the show week. The Bath and Bristol Associations have united for the occasion, and a grand collection of microscopes will be the result. The exhibition, which will be held on the Wednesday evening, will be devoted to an illustration of the growth, structure, and products of plants, and to the animal pests that affect the vegetable world.

—— We have this week received from Mr. Jas. Backhouse, of York, specimens of some scarce and beautiful hardy flowers, now in flower in their nurseries, among them being the Pyrennean Adonis, a fine species, with two rows of petals, and a larger flower than Adonis vernalis; the long-spurred yellow Columbine (Aquilegia leptoceras aurea), with clear yellow flowers, and spurs nearly three inches long; the delicately-coloured Calochortus cœrulea, the wax-like and rich yellow Cyclobothra pulchella—both the last being interesting and pretty Californian bulbs, which Mr. Backhouse finds easy of culture in pots, and Hausmann's Saxifrage, said to be a hybrid between S. aizoides and S. elatior.

—— A terrific storm passed over the Midlands on Tuesday last. Near Nottingham hail fell in large spherical pieces, causing immense damage to the fruit crop. Gooseberries and Currants were cut clean off the trees, strewing the ground, and other fruits were also very much injured. At Coventry a quantity of glass has been injured in conservatories, and the injury to gardens and to fruit trees there is also considerable. Mr. Lowe, of Highfield House Observatory, states that a considerable number of the hailstones measured two inches in circumference, and that on the cessation of the storm some hundreds were seen that measured three inches in circumference. These stones fell with great force, rebounding two or three feet from the ground, and some trees had a third of their leaves cut off.

—— We are informed that Mr. James Backhouse, of York, has just received from Borneo several new Trichomanes of surpassing beauty. One of them is the plant described some years since by Mr. Backhouse in one of our horticultural journals as T. superbum, and another is Mr. Backhouse's T. setigerum. T. Pluma is also amongst them, and two other allied species, one of which may be T. capillaceum.

—— In an address read before the New York Rural Club, Mr. T. P. Quin, an American horticulturist of well deserved reputation, says a good deal in praise of English ornamental gardening. In conclusion, however, he remarked, "that in the more practical part of horticulture we take the lead by at least twenty years. During my stay in England, I visited many of the largest and best-managed vegetable farms in the vicinity of London, and I was surprised to witness their primitive methods, both in their system of cropping and tedious way of doing the work. It is quite within bounds to say, that a man familiar with 'trucking' in New Jersey, will do a third more work in a given time than a man in the same position in an English garden. The ordinary implements used by the latter are clumsy and unnecessarily heavy, and this weight has to be carried around at considerable waste of strength both of men and animals. For instance, a common digging spade or fork will weigh at least twice as much as one of ours, intended for the same class of work."

—— The Baroness Meyer de Rothschild has made arrangements for sending a supply of cut and other flowers from Mentmore every week for the Hebrew and general wards of the London Hospital.

—— Mr. Shaw, an English settler in St. Louis, has presented a park to the inhabitants of that town. It is a richly wooded and picturesque domain, situated close to the city, covering 300 acres, and worth £100,000.

—— A Maryland cultivator says that the Peach growers of the United States are particularly indebted to Mr. Thomas Rivers, for his success in producing the Beatrice Peach, an early variety that is intrinsically good.

—— M. Frederic Hamilton has just published at Nice a scientific, historical, literary, and exegetical treatise on the plants mentioned in the Scriptures. Foreign journals are loud in their praises of the research and erudition displayed in this work.

—— Baron Von Mueller reports that great mortality has lately existed among the cattle in certain districts of the colony of Victoria, which is attributable to their having eaten the herbage of a Lobelia.

—— We were very much surprised to see at Kensington the other day fresh and fully developed blooms of Chrysanthemums, shown by Mr. A. Forsyth, of Stoke Newington. The occurrence of these plants in bloom at this season is quite as surprising as it would be to hear the cuckoo at Christmas.

—— The effect of the flowers and plants in the large tent at South Kensington is very much marred by the numerous rough poles and cross-beams which there meet the eye in every direction. It is rather a pity that a better example in this way is not shown at headquarters. We can hardly expect our provincial shows to be well arranged if such ugly and shanty-like framework is thought good enough for the great London show.

—— In a communication to the Scientific and Medical Society of Innsbrück, Dr. Kerner states, as the result of his observations on Alpine plants, that the growth of the stem and even of the flowers of many species proceeds at the temperature of 32° Fahr.; the flowers may in some cases open, and even mature their pollen, beneath a thick covering of ice, the surface of the glacier being penetrated in innumerable places by their stems.—*Nature.*

—— We have received a coloured illustration of Mr. Wm. Paul's "Waltham Cross" Grape, a magnificent new variety, which has been awarded a first-class certificate by the Royal Horticultural Society. In berry, bunch, and colour it resembles the Muscat of Alexandria, but its flavour is more like that of the Black Hamburgh than a Muscat. It is reported to grow and ripen its fruit thoroughly in a house with the Black Hamburgh, and it is said the fruit will hang, if required, till February. Mr. Barron, the superintendent at Chiswick, states that "it is certainly the most noble and most handsome late white Grape in cultivation;" and others speak of it in equally high terms.

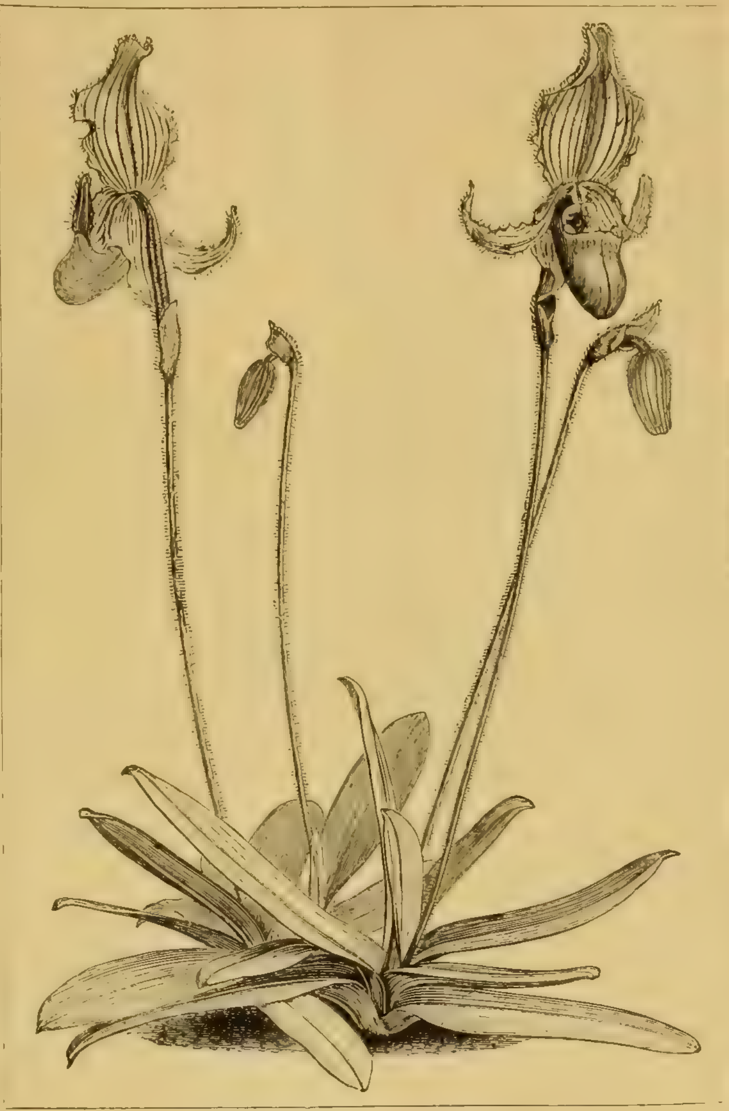
—— The anniversary meeting of the United Order of Free Gardeners took place the other day at Shrewsbury. The Grand Master, in opening the proceedings, said there were 77 districts in the society, comprising 572 lodges and 37,731 members. During the past year 4,595 members had been initiated, 1,855 had been suspended, and 317 had been expelled. The total income was £39,608 14s. 0½d., and the expenditure £32,580 15s. 7½d., showing a gain on the past year of £7,027 18s. 5d. The number of delegates attending the meeting was 165, at a cost of upwards of £500 to the Order. Mr. J. Figgins, M.P., and Mr. Douglas Straight, M.P., honoured the demonstration with their presence, and dined with the members; and, among others, were the Rev. J. Yardley, Alderman Turner, and Councillor Turner.

—— On Tuesday evening the church of St. Catherine Cree was one of the sights of London, as, indeed, it always is on Whitsun Tuesday, that being the day upon which the anniversary Floral Sermon is preached there for the edification of young children. The congregation, principally children and women, wore either a posy pinned in the breast, or held a nosegay in their hands, as a befitting decoration for a floral sermon. The appearance of the inside of the church was very beautiful. On the pulpit was a bouquet exhibiting great taste in construction, and at which many stolen glances were cast by the fairer portion of the congregation. This triumph of floral grouping was, as the preacher informed us, the present of a young lady, who had presented a similar one to him every year since he first preached a sermon upon flowers. For the happy idea of having an annual Flower Sermon preached at Whitsuntide we are indebted to the Rev. Dr. Whittemore, who preached an eloquent sermon, couched in plain language, and well adapted to the comprehension of his juvenile auditors.

THE INDOOR GARDEN.

CYPRIPEDIUM FAIRIEANUM.

This is a distinct and charming little plant, and seldom met with in cultivation. It was introduced from Assam some fifteen years ago, and sold at Stevens' rooms shortly afterwards. I believe Mr. Reid, of Burnham, Somerset, was the first to flower this species, although it was named by Dr. Lindley in honour of Mr. Fairie, of Liverpool, who exhibited a plant in bloom before the Horticultural Society, when their meetings were held at Willis's Rooms. Our illustration gives a good idea of its general contour and habit. The leaves are of a pale and rather glaucous green colour, and spread horizontally over the top of the pot or pan in which it is grown. The flowers are borne singly on slender hairy scapes 6 to 9 inches high, and are of a greenish white colour, delicately pencilled with dark green and rich violet purple. The leaves are perfectly smooth, but both scapes and flowers are densely clothed with short hairs, as shown in our figure. There are good specimens of this plant in the collections of John Russel, Esq., of Mayfield, Falkirk, N.B., E. Salt, Esq., of Ferniehurst, and E. G. Wrigley, Esq., of Bury. It is best grown in a cool or intermediate house, and luxuriates in a well-drained compost of turfy loam, peat, and sand, and the top of the pot should be covered with living sphagnum, into which all the Lady's Slippers root vigorously; a shady position and frequent syringings are likewise favourable to it. It generally flowers about September and October, lasting about a fortnight in beauty. A plant of this choice species flowered in the old Orchid house at Kew in 1867, and was an object of much attraction to all who had an opportunity of seeing it. F. W. B.



Cypripedium Fairieanum (half the natural size).

LISIANTHUS RUSSELLIANUS.

As some of your correspondents have lately recorded their experience respecting the growth of this truly beautiful plant, permit me to give you mine. I sow the seed about the first week in March, in 5-inch pots, half-filled with drainage, the other half, to within about half an inch of the top, being a compost of light sandy loam, peat, and leaf-mould in about equal parts, sifted fine, with a good sprinkling of sand, the top being pressed level, and well watered. The seed is then sown thinly, and a little dry sand is sprinkled over it. The pots are then put in a shady part of a Cucumber pit, and set in saucers filled with water, with a square of glass over them. As soon as the plants are up, and can be well handled, they are potted off singly into 2-inch pots, in the same compost, and again returned to the same situation, until they have got well established and have filled their pots with roots. They are then shifted into 3-inch pots, and kept in the same growing heat. In August they are shifted into 6-inch pots, and kept in the same growing condition until about the beginning of October, by which time they are good strong plants, with pots well filled with roots. In October they are taken out of the pits and placed on the top shelf of a cool stove, close to the glass, each pot being still placed in a saucer, by which means only the roots are supplied with water—as they are very liable to damp off if kept wet on the surface of the pot. They should remain under the conditions just named until the beginning of February, when they may be potted in 8-inch pots, in a compost of one-half light turfy loam, the rest peat and leaf-mould in about equal proportions, with a good sprinkling of sand, and placed in a pit, the pots being plunged in tan, in a bottom heat of from 80° to 90°, with a top heat of 70° in the day time, allowing it to run up to 85° or 90°. While growing they enjoy a strong moist heat, with a brisk bottom-heat. As soon as they begin to grow they should be stopped at one or two joints, so as to induce them to form bushy well-shaped plants, and about the middle of April they may be shifted into their flowering pots, using the same compost in a rougher state, and again plunging them in the same bottom-heat, frequently stopping them until sufficient shoots are obtained to form a good head. They should then be tied out, and kept in the same moist heat until the flowers begin to expand, when they may be gradually hardened off, to stand in a cool stove or greenhouse. For my largest specimens I use twelve-inch pots, and after they are placed in the pots in which they are to bloom they are frequently watered with weak guano-water, which appears to suit them admirably. Under this treatment I seldom fail to have fine bushy plants that flower well, and when well grown few plants are handsomer than this Lisianthus. M.

THE FINEST ACACIAS FOR THE CONSERVATORY.

There are so many species of these handsome Australian shrubs, that the amateur may well be puzzled in making a selection. It may, therefore, be useful to furnish a list of the very finest kinds, in the order of their time of flowering. Few plants better repay the care bestowed upon them than these.

	Time of flowering.		Time of flowering.
Acacia cochlearis	... Jan. to March	Acacia Sophoræ	... April to May
,, Riceana	... March to June	,, linifolia	... ,, ,,
,, viscidula	... March to May	,, suaveolens	... ,, ,,
,, diffusa	... March to April	,, armata	... April to June
,, argyrophylla	,, ,,	,, Drummondi	... ,, ,,
,, hispidissima	... April to May	,, paradoxa	... May
,, longifolia	... ,, ,,	,, oleæfolia	... ,,
,, grandis	... ,, ,,	,, undulæfolia	... ,,
,, vestita	... ,, ,,	,, Latrobæi	... ,,
,, taxifolia	... ,, ,,	,, floribunda	... ,,
,, verticillata	... ,, ,,	,, asparagoides	May to June
,, pubescens	... ,, ,,	,, pulchella	... ,, ,,

All these plants, which have flowers more or less yellow, are very handsome, and of easy culture in a conservatory or cool house, in heath-soil. In the Mediterranean region, especially at Nice and Hyères, we have seen the greater number of these charming species growing in the open air without shelter of any kind.—*L'Illustration Horticole.*

Caladium esculentum.—I found my roots of this nearly rotten this spring. I, therefore, cut out all decayed portions, rubbed the wounds with powdered charcoal, and started the roots in Cocoa-nut fibre and silver sand, in a brisk heat. They started freely into growth, and from each rhizome several shoots were produced. I cut off these after they had grown a few inches, with a small piece of the old root attached to them, and some young roots, and potted them separately, in light soil, replacing the old roots or rhizomes again in the bed, after rubbing over their wounds with powdered charcoal. The younger shoots that were too weak at the first examination to be separated soon got strong, and in their turn were similarly separated and potted, and thus I continued until the root-stocks were completely exhausted, and had yielded every shoot capable of being made into a separate plant. Thus, although my prospects of obtaining a stock of Caladium esculentum in March were poor, I have now (May 26) an excellent and numerous progeny of healthy plants; I never had, indeed, such an abundance of them. In former years I only used whole roots, starting them into growth about the 1st of March, and rubbing off all growths except two or three, and in this way I maintained a good stock of strong plants; but under exceptional circumstances the mode of raising young plants just described may be found worth a trial. —JAMES MACDONALD.

THE GARDEN GUIDE.

SUFFOLK.

BARTON HALL.

THIS place is distinguished for its arboretum, which contains some fine specimens of Catalpas, Magnolias, and other trees, as well as of Conifers. Of the latter, the following are the measurements of a few of the finest specimens:—

	Height. feet.	Circumference of trunk 4 feet from the ground. feet.
Abies Douglasii	51	7
,, canadensis (Hemlock Spruce)	20	2¼
,, Menziesii	40	4
,, Khutrow	35	4
Picea cephalonica	54	8
,, Fraseri	38	3
,, Pinsapo	22	3
,, (common Silver Fir)	105	9½
Pinus excelsa	38	1½
,, monticola	35	4½
Cupressus sempervirens	30	3
Cryptomeria japonica	30	3½
Taxodium sempervirens	32	4½
Wellingtonia gigantea	23	2½

The Douglas Fir and the Picea cephalonica are doubtless the finest trees of their kind in East Anglia. An Indian Horse Chestnut, some 30 feet in height, has flowered freely at Barton for years, and seems as much at home as the common white or scarlet Horse Chestnut. Around the house are nice flower gardens and shrubberies, and a pretty conservatory. The kitchen garden is close to the house, but planted out. It contains convenient ranges of forcing houses, Vineries, plant houses, Ferneries, &c., and in front of the main range of glass a pretty flower garden, sheltered, and mainly devoted to Roses and herbaceous and bedded-out plants. The garden is of good size and quality, much, however, overhung with forest trees along its upper boundary wall. Here is a novelty, in the shape of a prettily variegated Apricot tree, which fruits and grows as freely as other sorts. Its leaves are more or less splashed with silver. The Polmaise system of heating was practised here successfully for many years, and the Grapes grown under it were remarkably good in quality. The pleasure grounds and gardens at Barton may be said to combine both the ancient and modern styles, as well as the usual characteristics of the villa and the country mansion.—Proprietor, Sir Charles Bunbury, Bart.; gardener, Mr. W. Allan. Distance from Bury St. Edmunds, 3 miles.

FORNHAM PARK.

The park here is extensive and well wooded. The gardens and grounds, too, are large and interesting. A small geometrical garden is placed in front of the house, bounded by a broad terrace of gravel and a retaining wall that overlooks the park and lake. The latter has been greatly improved by planting on the farther side of it Rhododendrons and other shrubs, Pampas Grass, &c. The lawn, which is skirted with thriving shrubberies, is furnished with some venerable Cedars, young Conifers, and other trees. The kitchen gardens are large, and Grapes, Peaches, Melons, Cucumbers, and the usual kinds of plants for furnishing and cutting are well and plentifully grown. On the back of the conservatory the Luculia gratissima flowers beautifully, and the only regret is that so sweet a plant should bear cutting so badly; hardly are the flowers fairly severed from the tree than they begin to fade. The range of glass reaches right across the kitchen garden, and against one of the walls is an excellent Peach case.—Proprietor, G. Gilstrapp, Esq.; gardener and forester, Mr. Dring. Distance from Bury St. Edmunds, 2½ miles.

HENGRAVE HALL.

This is a fine ecclesiastical-looking mansion in the Tudor style, enclosing a quadrangular embattled court. It is over three hundred years old, and has undergone considerable alterations and improvements. Surrounding it is a fine park, well wooded, but lying rather low. It covers about 300 acres, and contains a lake near the entrance. The gardens, which join the house, were remodelled a few years ago, and laid out in the terrace style with steps and vases. They are well planted and furnished, but the site is not favourable for the style, the position of the house and its surroundings being flat. The kitchen garden is surrounded by good walls, well furnished with fruit trees. Peaches, Pears, and Cherries do remarkably well at Hengrave, where there is a nice range of plant houses. —Proprietress, Lady Gage. Distance four miles west of Bury St. Edmunds.

NOWTON COURT.

This pretty modern mansion in the Tudor style is surrounded by extensive pleasure grounds and gardens. Of late years most of the choicer Coniferæ have been planted in sheltered positions in the shrubberies, park, and belts of plantations, and numbers of them are making rapid progress. The system of sheltering by commoner plants, and gradually cutting them away as the more tender trees grow, is very favourable to the growth of the choicer trees. Tree Pæonies, herbaceous ones, and many other hardy perennial plants and shrubs, are remarkably well grown at Nowton. A neat conservatory is attached to the mansion, and there are several groups of flower beds and gardens tastefully furnished. The shrubberies are extensive, and there is a lake of considerable size, and dense masses of trees and shrubs to shut out the grounds from the public road. The kitchen garden contains some good Vineries. Quantities of seedling forest trees, young shrubs, and trees from cuttings, are also raised and nurtured here until fit for planting out in their permanent positions. Within a few years Nowton promises to be one of the best furnished places in the county as regards rare and choice trees and shrubs. Roses do remarkably well here, and there is a fine collection, many of them being purchased direct from the Parisian and other continental nurserymen.—Proprietor, Henry James Oakes, Esq.; gardener, Mr. Jolly. Distance from Bury St. Edmunds, two miles south-east.

RUSHBROOKE HALL.

This fine Elizabethan mansion, which is surrounded by a moat, occupies a commanding site in a beautifully undulated and richly wooded park. The house forms three sides of a square, and contains a fine hall, which was a place of royal resort in the days of Elizabeth. The gardens partake of the same ancient character as that of the hall, and bear traces of much grandeur and beauty, in sundry sunk walks, old shrubberies, and Roseries. The kitchen gardens are near the house, and are celebrated for their vegetable and fruit growing qualities. The position of Rushbrooke Hall is one of the finest in the country, and, what with the River Lark washing, as it were, the very feet of the building, and a considerable lake, it has all the elements of landscape beauty ready to be worked up into a handsome picture by the eye of genius and the hand of taste.—Proprietor, the minor son of the late Col. Rushbrooke; gardener, Mr. Westley. Distance three miles south-east of Bury St. Edmunds.

THE FLOWER GARDEN.

STOCKS.

This is emphatically the season for Stocks, for during May we get the grand Bromptons, the wonderfully floriferous Queens, the beautiful dwarf Intermediate, and in some cases good Ten-week and pyramidal kinds that have been treated as Intermediates through the winter. For weeks past I have had some dozen kinds or so in flower, and most delicious they are, filling the air with sweet perfume, and adorning the garden with beautiful flowers. The grandest of all Stocks are the Giant Bromptons, tall magnificent plants that carry huge spikes of flowers some 9 inches in length, and as massive as they are long. Why do not gardeners employ these fine plants more freely than they do? The Brompton Stock might be planted out for the summer time in any out of the way spot, and then early in the year be lifted with good balls and planted about in kitchen garden borders, or, indeed, in any place where, when in flower, they can show themselves off to advantage. No better place for them, however, can be found than dwarf shrub borders, to which they should be transplanted at once from the seed bed. The Bromptons comprise scarlet, white, and purple colours, but the latter is of an inferior quality; indeed, it is not the true giant variety. A good "strain" of the white kind is rare. I, however, got some seed of it out of a cottage garden in Hampshire, saved from plants that grew over three feet in height, and which produced plenty of double flowered plants. Seed of the Bromptons should be sown in the open ground about the middle of April, and then strong stout plants can be got before winter sets in. For general cutting, no other Stock beats the Queen, as it produces branches all over it by dozens, every bit of which can be used. Seed of this must also be sown in April, and treated as that of the Bromptons; the Queens are, however, the hardiest of all Stocks, and stand the winter well. In their case the purple is the commonest colour, then red, and lastly white. These Stocks are great rarities in large places; indeed, they are seldom to be found except in cottage gardens, and then only in isolated cases, and usually one sort in a place. I have seen the white Queen, but not recently. I should think that if these Stocks were grown in considerable quantities in some of our market gardens, and under overhanging fruit trees, they would furnish a supply of valuable flowers for market purposes. The Queens, if of a good "strain," furnish 60 per cent. double; the quantity of flowers, therefore, that a thousand or two of plants would yield would be enormous. These Stocks, when well managed, grow about 15 inches in height, and as much through. The best of all the Intermediates is the true East Lothian "strain," being in habit very dwarf, robust, and branching, but the plants belonging to it are not quite so early as some of the continental kinds. Seed of it should be sown early in August, and when large enough the plants should either be potted up singly into 60-sized pots, or else be pricked out into a cold frame, there to stand the winter. In this section may be found purples, whites, and scarlets, all very clear and decided. The proportion of doubles which they produce is wonderful, at least 80 per cent., and where such is the case it is apparent that the seed of fine double "strains" must always be scarce and dear. There are some exceedingly fine forms of the Ten-week Stock, known as the Giant, that also produce the three colours usually found among Stocks in great purity and excellence. These I have now in fine condition, but they are best sown early in the spring and planted out for summer blooming. They are branching in habit, flower for a long period, and are useful for supplying cut flowers in the autumn. The Queen among pyramidal Stocks is Mauve Beauty, which forms a most massive spike of a delicate mauve tint, and emits a delicious perfume. Seed of this sown in August, and the plants treated as Intermediates, will, if potted up singly into 32-sized pots, yield some valuable plants for the decoration of either the sitting-room or conservatory. It is a Wallflower-leaved kind, and produces about 75 per cent. double. There is also a lovely new pyramidal Stock named Violette, that produces flowers of a delicate violet blue colour. This is likewise a good pot variety for spring use, and is a grand summer Stock. It produces about 80 per cent. of double flowers.

Flower of C. Fairieanum (natural size). (See p. 431.)

Few plants are greater favourites with the million than Stocks, and few trials of flowers, such as are common at Chiswick, would be more interesting than one of a complete collection of them, showing, as it would do, what strains were reliable and what were not.

A. D.

FLORAL WALL COPINGS.

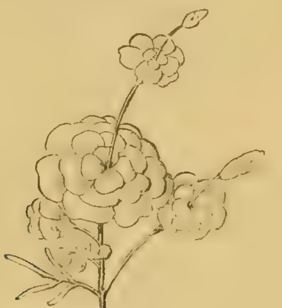
I noticed in the neighbourhood of Twickenham, the other day, that the top of a high brick wall was furnished with strong robust plants of the garden Antirrhinum, firmly rooted in the mortar. That these, when in flower, must have a pleasing appearance there can be no doubt, and one is tempted to ask, Why are not the tops of walls generally more utilised in that way, especially as a long length of flat wall top, especially if looked down upon, is the very reverse of ornamental? That Antirrhinums thrive so well on walls indicates their special adaptability for such positions, and Wallflowers are also equally hardy and capable of existing on the most meagre root-hold. Of course the mere scattering of seed on the top of a wall, or the thrusting it into the interstices of the bricks, may have but a partially successful result, but if a mixture of cow-dung and fine loam, in about equal parts, was plastered some two inches thick in the centre and bevelled off at the sides, all along the top of the wall, and some seeds of suitable plants were shaken over it whilst wet, there can be little doubt that a floral coping of uniform character would soon be produced. Perhaps even better than seed sowing would be pricking in at intervals small plants of Wallflowers, Antirrhinums, and such other hardy plants as would probably thrive in such a position. The whole of the remaining surface of the mixture might then have pricked into it bits of creeping Sedums, or Antennarias, or any of those creeping hardy alpines of which we have now such an abundance. Walls, especially if high, take many years before they can be covered with Ivies or other climbers, and even then could in no case produce so pleasing an effect as could be got from such a coping as I have indicated. Plants that easily reproduce themselves from seeds would always maintain a succession. There are often many spots about a place that are not visible on the ground level, but which, when looked down upon from an upper window, are the reverse of pleasing. Such spots as these may easily be decorated in the way indicated, and where so done well, the result, I am sure, will amply repay the labour.

A. D. B.

British Orchids.—How can I best cultivate these, especially the varieties of Ophrys?—J. E. C., *Oxford*. [When dormant, let them be lifted carefully and potted in soil somewhat resembling that in which they naturally grow; the pots should then be plunged in ashes in a cold frame partially shaded, and they should not be watered until they start into growth, and even then very carefully. As a rule, they like a soil somewhat chalky in character. If that cannot be obtained, use light turfy loam in which some broken limestone or chalk has been mixed. Do not hasten their growth too much; water them moderately, but regularly; and always keep them in a cool and airy place, such as a frame or greenhouse. Just as they are about to start in spring, they may be repotted in fresh soil, but in the same sized pots, taking care not to injure the roots in the operation. The plan of growing them in beds out of doors sometimes proves unsatisfactory; but they often succeed in a shady border raised a few inches above the general level, so as to throw off superfluous moisture in winter. They dislike heavy or cold rains; and, therefore, a covering of oiled canvas, or other waterproof material, not only in winter, but in summer, and a thin mulching of short manure over the beds, will be found to be of advantage to them.—F.]

SINGULAR CUCKOO FLOWER.

With the Meadow Bittercress or Cuckoo flower most people are acquainted, seeing that it grows abundantly in moist meadows throughout England, Scotland, and Ireland. In a bog in the south-west of the latter country I picked up, the other day, an interesting monstrosity of the double-flowered variety of this really pretty native plant, of which I forward you a sketch. The singularity consists in each of the flowers producing a second and smaller flower from its centre, this going on to produce a third in like manner. This abnormal elongation of the floral axis, which occasionally occurs in Roses and one or two other plants, gives this handsome little plant a very remarkable appearance. H. Noel Humphreys.



Meadow Bittercress.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Lilies.—The following are now in bloom at Heatherbank, Weybridge:—Szowitsianum, tenuifolium, Thunbergianum, carniolicum, pyrenaicum. Almost open, Thunbergianum bicolor, parvum.—W.

Camassia esculenta.—A patch of this is in fine bloom just now at Heatherbank; it grows on rock-work and is very beautiful, associated as it is with Ornithogalums, Scilla campanulata pallida, and other plants of that kind.—B.

Hellebores from Seed.—When it is desired to increase any of these plants from seed, the best way is not to disturb the ground around the plants, when they will be found to sow themselves. In this way most of the kinds increase freely in Mr. Ellacombe's garden at Bitton.—R.

Tulipa Gesneriana.—This is grown extensively in the Royal Botanic Gardens, Regent's Park, and is perhaps the most showy of all Tulips. Its colour is bright crimson scarlet, with dark blue centre. It is later and a little taller than the ordinary single varieties. A bed of this Tulip is both striking and effective, and when once seen not readily forgotten. I would recommend those who have never grown it to procure some bulbs next October or November.—O.

Pansies in Pots.—What is the best method of growing Pansies in pots, so as to bring them into flower in February? Where should the plants be placed, and what degree of temperature should they be grown in?—M. R. [It is scarcely possible to get Pansies into bloom in February. It might be done by having strong plants, showing flower in October, carefully lifted and potted from the open ground, kept close in a cold frame till they were established, and then removed to a shelf in a greenhouse near the glass. They will neither stand much heat nor a close atmosphere; should mildew make its appearance, apply at once flowers of sulphur.—J. L.]

Rose Stocks.—Would you kindly name a few Roses that do well on Briars, and also a few that succeed best on the Manetti stock?—E. P. R.——[All Roses do well on the Briar, but some few do not succeed on the Manetti stock when planted in the open ground, as for instance:—Tea Gloire de Dijon and its relations, Belle Lyonnaise and Madame Berard; Hybrid Perpetual—Marquise de Mortemarte, Reine du Midi, and some of the Comte de Nanteuil race, Henri Ledechaux, and Madame Creyton; but with these exceptions, most of the Hybrid Perpetuals bud freely upon, and grow finely on the Manetti.—The dwarfer Teas, which do well on it in pots, do not always thrive when grafted and planted out of doors on this stock; it is too vigorous.]

THE ARBORETUM.

BERBERIS ASIATICA AS A HEDGE PLANT.

This flowers and ripens seeds freely with me here in Devonshire, and I sow the seeds annually in drills, or broadcast in beds, in the open ground, about the first week in March, in a light soil, letting them remain undisturbed until the spring after. I then plant them out in the nursery in rows, about 15 inches row from row, and about 6 inches plant from plant. In two years they make fine strong bushes for permanent situations. Finding the plants to be free growers, nearly evergreen, and very strong, and raising, as I do, many thousands of them every year, I began to plant them out for hedges, and they succeeded particularly well both on banks and on the bare surface. The latter I can highly recommend for dividing allotments in cottage gardens, and, as this Berberry is free from mildew, it can be kept clipped with shears or shorn with a reaping hook to any width required. When planted on a bank it makes a beautiful hedge, by cutting out the very luxuriant shoots about twice a year to within an inch or two from whence they grow, allowing the side and weak growth to form the hedge. I have a hedge so treated, which has been planted upwards of twelve years, and at this time it is not more than 4 feet high and about the same width; and with the same treatment it can be kept to the same size. In planting this Berberry for hedges, keep the plants a foot apart, and, if the hedges are to be kept shorn, in single row; but if to be kept in more natural style of growth, plant two rows, not more than 1 foot apart, and the plants the same distance asunder, but put them in alternately. When strong this Berberry is proof against attacks from cattle.—C.

Trees and Shrubs for Suburban Gardens.—The illustrations and remarks which you have given from time to time upon the subject of what suburban gardens might be, have led me to the determination of rearranging and replanting my garden, with a view to produce, as far as circumstances will permit, something like the effect referred to in your illustrations. My garden is stiff clay, situated in a northern suburb, on a hill, and exposed to the north and north-east. Under these circumstances, I should like to have your opinion as to the most suitable trees and shrubs for planting for effect, hardy, quick growing, and handsome.—R. T. S. [The following trees and shrubs will suit your purpose, viz.: Cratægus Aronia, Layi, odoratissima, incisa, punctata, Douglasii, cordata, prunifolia, coccinea, nigra; Acer Lobelii, macrophyllum, eriocarpum, Neapolitanum, striatum, Pseudo-Platanus Leopoldii and purpureum, platanoides dissectum; Æsculus rubicunda; Ailantus glandulosa; double red and white Peaches; Cotoneaster frigida and Simonsii; Cercis Siliquastrum; Halesia tetraptera; Philadelphus speciosus, Gordonianus, grandiflorus; Pyrus intermedia, pinnatifida, spectabilis; Robinia hispida, macrophylla; Rubus odorus, spectabilis; Spiræa Lindleyana, ariæfolia, Nobleana, bella, callosa; Syringa Emodi; Tilia alba; Weigela rosea; Forsythia viridissima; Berberis Darwinii; Calycanthus florida; Daphne Laureola; Garrya elliptica; Deutzia crenata (double); Cytisus elongatus; Halimodendron argenteum; Hypericum prolificum; Leycesteria formosa; Ligustrum japonicum; Ribes aureum, speciosum; Magnolia conspicua, gracilis; Ilex latifolia; Viburnum plicatum; Alnus cordata.—G. Gordon.]

The Weeping Elm.—Among the ornamental trees of a lawn none have a finer effect than the Weeping Elm (Ulmus montana pendula). It is most suitable, from its peculiar habit of growth, for planting singly, as isolation best accords with its character. The branches in old trees are found turned abruptly from the main stem, and strike out in a direction between horizontal and perpendicular. They assume a broad, spreading, fan-like form, bearing a great profusion of large, dark green leaves, which form a complete shade to the ground below. As it is of rapid growth where the soil is good, and very ornamental, it should be on every lawn. It is also one of those trees which will bear transplanting readily, and when established it will produce shoots in one season from twenty to thirty inches long. —P. F. K.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Weeping Trees for Lawns.—Will you kindly tell me what weeping trees are the best for a lawn, as I have only got a Weeping Willow?—J. B. M. C. [The Weeping Wych Elm, Weeping Beech, Weeping Birch, Weeping Ash, Weeping Sophora, Weeping Larch. The Kilmarnock Weeping Willow, Dutch Medlar, Weeping Hawthorn, Weeping Aspen, and Weeping Mountain Ash.]

Evergreen Trees for a Churchyard.—I will feel grateful if you will tell me the names of some ornamental trees or Conifers, to line an avenue in my churchyard?—J. B. M. C. [The Hemlock Spruce, the Irish Yew, the Lawson Cypress, Thuja Lobbii, Cryptomeria elegans, Cupressus sempervirens, C. Nutkæensis, C. Goveniana, Irish Juniper, Juniperus rigida, and Abies Smithiana.

THE FRUIT GARDEN.

POT VINES FOR EARLY CROPS.

Every day's experience convinces me of the utility of growing Vines in pots for early Grapes, and it is a matter of surprise to me that, in establishments where these are grown, the pot Vine system has not hitherto been far more generally adopted. Permanent Vines will survive the strain of early forcing for a year or two, if cropped moderately and carefully tended, but the crops get lighter and lighter year after year, till in the end they hardly repay the labour of producing them, not to speak of the fuel. In these days, when coals are so dear, people are apt to look at the matter in this light, and are naturally anxious to utilise means and materials to the utmost. In the matter of early Grapes, therefore, I do not hesitate to say that the pot Vine system is the only really remunerative one, if carried out intelligently. I am simply urging a perfectly easy and economical practice. I estimate from reliable data that in a given space pot Vines will produce three or four times more fruit than permanent ones will in a constant way during the months of March, April, and May. I have at the present time thirty pot Vines swelling their fruit, which are twelve months old about this date (April 12), from eyes. They occupy just half the space permanent plants usually require, and they carry in the aggregate 180 bunches of fruit, such as permanent Vines never show after a few years' forcing. I ought to say that the number of bunches just named is what they are allowed to carry, for they showed more; but they will, if all is well, be forced for a still earlier crop next year, before being discarded, and so are cropped moderately, if six good bunches from a plant 7 feet high or so can be called a moderate crop.

HOUSES FOR POT VINES.

When Vines in pots are forced annually for the earliest crops, proper accommodation for them should be provided, and something like a system pursued. Two houses will be required—one for growing the Vines in from eyes the first season, and another for fruiting them in the next year. As earliness is a chief consideration, lean-to houses with a southern exposure will be found to answer best. The accompanying section (fig. 1) represents a useful form of house for the first year's growth and one which can be turned to good account for various other purposes, such as Cucumber, Strawberry, or French Bean forcing, &c., when not occupied by the Vines.

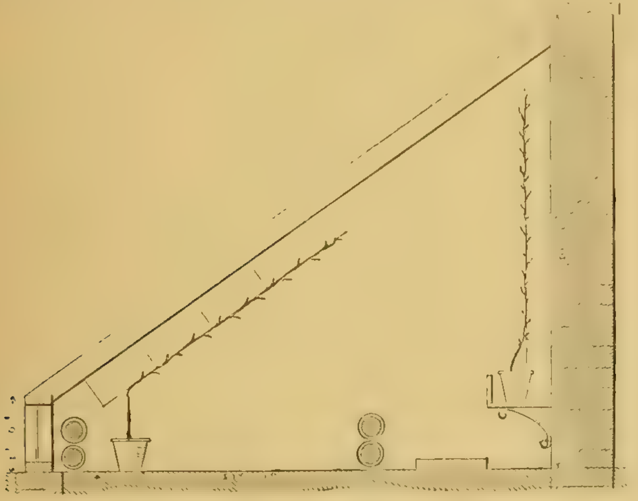


Fig. 1. Section of Growing House for Pot Vines.

It will be seen by the section just given that there is accommodation for two rows of plants, and that the pots are not plunged, but rest upon the ground and shelf, and that both rows have plenty of light. In calculating the length of house required, 14 inches at least of space must be allowed for each pot. Thus a house 30 feet long would hold fifty plants. The fruiting house may be of exactly the same form, allowing 2 feet instead of 14 inches space for each plant, but a loftier house is to be preferred for fruiting purposes. In the first season the Vines make their growth during the most favourable portion of the year, when but little fire-heat is needed, and when ample ventilation can be given to even the smallest structures; but as forcing is carried on in the second, or fruiting year, during the dull months of winter, low narrow houses are apt to become close and muggy—a condition not at all favourable to Vine culture—as they do not permit of the temperature and ventilation being maintained so steadily as do wide and high houses; and as the latter will contain a proportionately greater number of plants, they are not more expensive. Fig. 2 represents a good form of fruiting house, and shows how the Vines are arranged so as to accommodate the greatest number without obstructing the light.

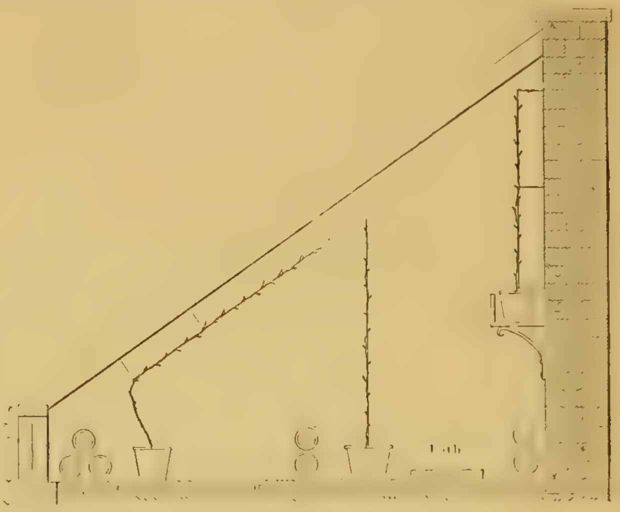


Fig. 2. Section of Fruiting House for Pot Vines.

In the above arrangement, the shortest plants are placed in front, and upon the shelf on the back wall, the tallest plants being reserved for the middle row, in order that their tops may be near to the glass. Arranged in this way, we secure, in the aggregate, a length of bearing wood considerably greater than the available length of rafter; while most of the plants stand upon the floor, which is an advantage, as they can be easily attended to, and the pots can be packed around with leaves, to prevent evaporation from their sides, thus saving watering, and securing an evener root-temperature than would be the case if the pots were exposed. Why, it may be asked, not have both succession and fruiting houses of the same form? Because, in fig. 1, the plants can be kept near the glass from the beginning—a matter of considerable importance in propagating Vines from eyes, and were we restricted, through circumstances, to one of the two forms just given, fig. 1 would be chosen for this reason alone; so much depends upon the first year's treatment.

GROWING AND FRUITING THE VINES.

Every healthy Vine-eye, under fair treatment, should make a vigorous cane the same year. Firm, short-jointed wood, with plump buds, should be selected from healthy Vines which have ripened their fruit about Midsummer or early in autumn, as these generally produce the best ripened wood. The cuttings may be taken when the Vines are pruned, inserted in soil, and kept moderately moist till the time arrives for preparing the eyes. Two systems of propagation are followed, about the relative advantages of which it may be proper to speak. The plan most generally adopted is to insert the eyes in 4 or 5-inch pots, filled with fine soil; the other is to insert them in square pieces of turf, first scooping out a hole large enough to hold a Walnut, in the centre of each turf, to receive the eye, which is afterwards covered over with fine soil. The pot system is a good one if carried out intelligently; but that is not always done. Its disadvantages are, that if the plants are not well attended to, they are liable to receive a check, thereby arresting their growth prematurely; their roots are also apt to be injured in shifting from one pot to another, and a check sustained at this stage is never entirely recovered. By the turf system, all these evils are avoided, for, if even the most ordinary precautions are taken from the time the eye is inserted in the sod till it has completed its growth in autumn, it receives no check. For pot Vines, the eyes should be put in by the first week of February, in order that they may complete their growth as early as possible. If pots are used, prepare as many 5-inch ones as there are eyes to be planted. Put an inch of clean crocks in the bottom of each, and fill them with a mixture of sifted soil, consisting of equal parts of loam, leaf-mould, and silver or river sand. Press the soil moderately firm, and the pots are ready for receiving the eyes. Prepare these by cutting them out with a sharp knife—or, what is better, a sécateur—leaving about half an inch on each side of the bud; then take a slice off behind the bud, about half-way into the pith, and they are finished. Put one eye into each pot, pressing it down just deep enough to bury the bud half an inch, and then plunge the pots where they can have a bottom heat of 75°. If sods are employed, prepare as many turves as are wanted, each 7 inches square, 2 inches thick, of a fibry texture, and free from wireworms. Scoop out a hole in the centre of each turf large enough to bury the eye, and arrange them closely together in a stove, vinery, or pit, where they can have the same amount of bottom heat as has just been recommended for eyes set in pots; then plant an eye in each turf, cover them with fine soil, and fill up, also, the crevices between the sods or turves. The eyes will soon break; and, as soon as those in pots show a decided disposition to grow, which they will indicate by throwing out one or two strong tendrils, transfer them to 14-inch fruiting pots, taking every care to preserve the roots from injury. Those in sods may be potted—or, rather, lifted into the fruiting pots previously filled, to within 4 inches of the top, with soil—as soon as their quill-like roots appear at the sides of the turves. The pots should afterwards be filled up level with the tops of the sods. The after treatment during the summer consists in watering—at first cautiously, till the plants are well rooted in their pots; but after that copiously, never allowing the soil to get dry. The pots should not be plunged, but set on slates, to prevent the roots from getting through into the bed. Time being an object, the plants should be exposed to a good light, and subjected to a temperature of 90° or 95° in sunny weather, air being always admitted. A high temperature generally, with a free circulation of air and abundance of water at the root—not forgetting regular supplies of liquid manure—must be maintained. With such treatment the Vines will rush up speedily, and should be topped at the height of 7 feet. After the first pinching, every shoot or lateral should be pinched to a joint as soon as they can be got hold of. This practice accelerates the ripening of the canes, and throws increased strength into the main leaves, which get broad and thick, with great plump fruit-buds at their axils. By the middle of July the canes will be getting pretty ripe and brown, and from that date the temperature may be gradually reduced and abundance of air admitted at all times, until the beginning or middle of August, when the ventilators may be thrown permanently open day and night, fire-heat discontinued, and the plants left to harden off gradually. By the end of September, at the very latest, they must be pruned, by cutting off all the laterals and leaves along the canes close to the eyes, and the plants should be at the same time removed from the house to the coolest quarters available, say a Peach house where the fruit has been gathered. Here they may remain till the middle of November, when they must be transferred to the fruiting house. As they are not to be retained longer than one or two years at the furthest, we can afford to push them faster than permanent Vines; therefore they may be started at a temperature of 50° or 55° by night, and from 60° to 80° by day, according to the weather. At first the canes are better laid horizontally till they break, when they may be tied to the wires. As a rule, each Vine will show from eight to twelve bunches; if they are to be fruited the following year, the number may be reduced to six of the best; but if they are only to be retained one year, seven or eight bunches may be left on each plant. After this, the only attention required will consist in tying the shoots, stopping laterals, thinning the berries out freely, and watering liberally till the fruit is cut. From the time the fruit is set till it begins to colour, weak liquid manure must often be given. The best soil for pot Vines is three parts of good strong loam, one of rotten hotbed manure, and one of sand. The pots should also be surfaced with rich soil before they are started in November. J. S.

THE FRUIT CROPS IN SOMERSET.

We had a glorious rainfall a few days ago, and the fruit and Potatoes are generally safe, except in the case of low lying ground or near water. On the night of the 19th and morning of the 20th ult., the thermometer went down to 5° below freezing, but no visible damage has occurred, and with a nice soft S.W. wind and gentle rain I hope our fears for the crops are over as far as frost is concerned. We have now, I think, only birds and heavy gales to fear. Pears are in many cases half an inch in diameter, Apples are well set, Gooseberries and Currants look promising. Plums are thinly sprinkled on some trees. The orchards about here are sheets of bloom, and the leaves well expanded; in fact the size and health of the foliage are this season remarkable, especially in the case of Pears on the Quince; the very wet season of 1872 evidently suited these surface rooting trees, and thus it may be inferred that we ought either to plant them in naturally moist ground, or mulch them with short litter, and give them a good watering now and then. Let me, however, caution parties as to how they apply water. It should not be given unless the trees are either mulched or the ground is forked over soon after watering, otherwise the soil will crack, and evaporation will take place to a detrimental extent. Strawberries are coming into full bloom, and the gentle showers we are now having will, I think, ensure a crop. I never find my crops good unless it rains well when the plants are in flower. Keens' Seedling, which is now a sheet of flower, may be said, as regards excellence, to be the Strawberry grower's mainstay. It has stood his friend for over fifty years (it was raised in 1820), and it still keeps the field as the most reliable sort. Next to it in worth is President, a kind which throws a strong bold truss of bloom, well up above the leaves; its fruit escapes being washed into the earth, and withal it has but few rivals as to flavour, size, and bearing qualities. Hericort de Thury is an admirable sort for preserving, a strong and free grower, a great bearer, and the fruit is scarlet to the core.

Merriott. J. Scott.

HUCKLEBERRIES.

(GAYLUSSACIA.)

The Huckleberry (more properly Whortleberry) belongs to the Vaccinium family. In England it is called the Bilberry, in Scotland the Blaeberry. There is a white Whortleberry found in Britain, and occasionally in North America, but it is rare. The European Whortleberry (Vaccinium Myrtillus) is dark purple, and grows on bushes varrying from a few inches to 2 feet in height, with ovate deciduous leaves, although some species are evergreen. The Bog Whortleberry (Gaylussacia frondosa) is common in Northern Europe and in Asia, and extends even to the ice-bound shores of Greenland, where it covers large areas of marshy land. The bushes of this berry, in many instances, grow to be more like trees than shrubs, in this country, at least, sometimes attaining a height of 8 feet. The fruit is much larger than the common berry, but inferior to it in flavour. There is a species of Whortleberry nearly akin to the Cranberry, and which was formerly classed with that family. It is found in this country, and in the north of Europe and Asia. It is red, and possesses all the acidity of the Cranberry. The plant is a very pretty dwarf shrub, and is evergreen. Large quantities of the red Whortleberry are sold for Cranberries in the south of Europe, in Aberdeen, Scotland, and other places. It is used in the same manner and for the same purposes. There are many more varieties of the Whortleberry, the most of them natives of this country. The most common, and the ones which get into market, are the early "sugar-blues," the purple "low-bush" and the jet-black "high-bush." This latter is the latest of all, and after it has ceased to be sought for by anxious "pickers," forms food for weeks for millions of wild pigeons on the barrens where it is found. As New York consumes thousands of bushels of Huckleberries, it may be of interest to the consumers to know where they come from. The great Huckleberry patches of America are in the southern part of this State, North-eastern Pennsylvania, and Northern New Jersey. The counties of Sullivan, Orange, and Ulster in this State, and Pike and Monroe Counties, Penn., supply New York city's demand for the fruit, and Carbon and Lehigh Counties, Penn., furnish the Philadelphia markets.—*New York Tribune.* [Gaylussacia Pseudo-Vaccinium, a neat shrub with handsome red flowers, was formerly grown in our greenhouses.]

FILBERTS AT ASHRIDGE PARK.

At few places are these better managed than at Ashridge Park, where they are grown, as will be seen by the accompanying illustration, in the form of pyramids. They are kept to a single stem for about one foot from the ground, and are afterwards pruned as one would a pyramid red or white Currant tree, *i.e.*, the side shoots are spurred in close, leaving eight or ten eyes on the leading shoot. As they generally grow strongly when about 4 or 5 feet high, they are lifted or root pruned, which induces them to become fruitful; but if they continue to grow very strongly they are root pruned occasionally, so as to keep them in good bearing condition.

Pyramidal Filbert tree, Ashridge Park gardens.

GERMINATION OF SEEDS.

The student will do well to watch with care the various stages of the act of germination, as exhibited in several species of plants. For this purpose a dozen or more seeds of each plant are sown—the smaller kinds of seed, ½ inch, the larger, 1 inch deep—in a box of earth or sâwdust, kept duly warm and moist, and one or two of each kind are uncovered and dissected at successive intervals of twelve hours until the process is complete. In this way it is easy to trace all the visible changes which occur as the embryo is quickened. The seeds of the Kidney-Bean, Pea, Maize, Buckwheat, and Barley, may be employed. We thus observe that the seed first absorbs a large amount of moisture, in consequence of which it swells and becomes more soft. We see the germ enlarging beneath the seed coats; shortly the integuments burst and the radicle appears; afterwards the plumule becomes manifest. The endosperm, if the seed have one, and in many plants the cotyledons (as with the Horse-Bean, Pea, Maize, and Barley), remain in the place where the seed was deposited. In other plants (Kidney-Bean, Buckwheat, Squash, Radish, &c.) the cotyledons ascend and become the first pair of leaves. In the former case the rudimentary stem or radicle scarcely elongates at all; in the latter it grows through its whole length, and elevates the cotyledons above the soil. The ascending plumule shortly unfolds new leaves, and, if coming from the seed of a branched plant, lateral buds make their appearance. The roots are formed at the other end of the radicle. When the plantlet ceases to derive nourishment from the mother seed, the process is finished. As to the conditions of germination, we have to consider in detail the following :—

TEMPERATURE.

A certain range of warmth is essential to the sprouting of a seed. Göppert, who experimented with numerous seeds, observed none to germinate below 4°. Sachs has ascertained for various agricultural seeds the extreme limits of temperature at which germination is possible. The lowest temperatures range from 5° to 13°; the highest, from 39° to 47°. Below the minimum temperature a seed preserves its vitality; above the maximum it is killed. He finds, likewise, that the point at which the most rapid germination occurs is intermediate between these two extremes, and lies between 26° and 34°. Either elevation or reduction of temperature from these degrees retards the act of sprouting. In the following table are given the special temperatures of germination for six common plants :

	Lowest Temperature.	Highest Temperature.	Temperature of most rapid Germination.
Wheat	5° C.	40° C....	29° C.
Barley	5	40	29
Pea	7	39	29
Maize	9	46	34
Scarlet-Bean	9·5	44	26
Squash	12	46	34

For all agricultural plants cultivated in England, a range of temperature of from 13° to 32° is adapted for healthy and speedy germination. It will be noticed in the above table that the seeds of plants introduced into northern latitudes from tropical regions—as the Squash, Bean, and Maize—require and endure higher temperatures than those native to temperate latitudes, like Wheat and Barley. The extremes given above are by no means so wide as would be found were we to experiment with other plants. It is probable that some seeds will germinate nearly at 0°, or the freezing-point of water, while the Cocoa-nut is said to yield seedlings with greatest certainty when the heat of the soil is 49°. Sachs has observed that the temperature at which germination takes place materially influences the relative development of the parts, and thus the form of the seedling. According to this industrious experimenter, very low temperatures retard the production of new rootlets, buds, and leaves. The rootlets formed directly from the embryo become, however, very long. On the other hand, very high temperatures cause the rapid formation of new roots and leaves, even before those existing in the germ are fully unfolded. The medium and most favourable temperatures bring the parts of the embryo first into development, at the same time the rudiments of new organs are formed which are afterwards to unfold. The vitality of some seeds has been found not to be destroyed by a cold of —18°; nor by a dry heat of 75°.

MOISTURE.

A certain amount of moisture is indispensable to all growth. In germination it is needful that the seed should absorb water, so that motion and solution, and in consequence chemical action, can take place in the contents of the germ-cells. Until the seed is more or less imbued with moisture, no signs of sprouting are manifested, and if a half-sprouted seed be allowed to dry, the process of growth is effectually checked, and, in many cases, the vitality lost. The degree of moisture different seeds will endure or require is exceedingly various. The seeds of aquatic plants naturally germinate when immersed in water. The seeds of many land plants, indeed, will quicken under water, but they germinate most healthfully when moist but not wet. Excess of moisture often causes the seed to rot.

OXYGEN GAS.

Free oxygen, as contained in the air, is likewise essential. Saussure demonstrated by experiment that proper germination is impossible in its absence, and cannot proceed in a vacuum, or in an atmosphere of other gases. As we shall presently see, the chemical activity of oxygen appears to be the means of exciting the growth of the embryo.

LIGHT.

It has been stated that light is prejudicial to germination, and that therefore seeds must be covered (Johnston's Lectures on Agr. Chem. and Geology, 2nd Ed., pp. 226, 227). When, however, we consider that nature does not bury seeds, but scatters them on the surface of the ground of forest and prairie, where they are, at the most, half-covered, and by no means removed from the light, we cannot wholly accept this. The warm and moist forests of tropical regions, which, though shaded, are by no means dark, are covered with sprouting seeds. The gardener knows that the seeds of Heaths, Calceolarias, and some other ornamental plants, germinate best when uncovered, and the seeds of common agricultural plants will sprout when placed on moist sand or sawdust, with apparently no less readiness than when buried out of sight. Finally, R. Hoffmann (Jahresbericht über Agrikultur Chem. 1864, p. 110) has found in experiments with twenty-four kinds of agricultural seeds that light exercises no appreciable influence of any kind on germination.

THE TIME REQUIRED FOR GERMINATION.

The time required for germination varies exceedingly, according to the kind of seed. As ordinarily observed, the fresh seeds of the

Willow begin to sprout within twelve hours after falling to the ground. Those of Clover, Wheat, and other grains germinate in three to five days. The fruits of the Walnut, Pine, and Larch lie four to six weeks before sprouting, while those of some species of Ash, Beech, and Maple are said not to germinate before the expiration of one-and-a-half or two years. The starchy and thin-skinned seeds quicken most readily. The oily seeds are in general more slow, while such as are situated within thick and horny envelopes require the longest periods to excite growth. The time necessary for germination depends naturally upon the favourableness of other conditions. Among these conditions we may name the age of the seed and its percentage of moisture, the nature of the soil in which it is sown, and the presence or absence of certain chemical compounds. Many metallic salts arrest or retard germination; on the other hand, very weak chlorine-water accelerates the process. Cold and drought delay germination, when they do not check it altogether. Seeds that are buried deeply in the soil may remain for years, preserving, but not manifesting, their vitality, because they are either too dry, too cold, or have not sufficient access to oxygen to set the germ in motion. To speak with precision, we should distinguish the time from planting the dry seed to the commencement of germination—which is marked by the rootlet becoming visible, and the period that elapses until the process is complete, *i.e.* until the stores of the mother-seed are exhausted, and the young plant is wholly cast upon its own resources. At 5° in the experiments of Haberlandt, the rootlet issued after four days in the case of Rye, and in five to seven days in that of the other grains and Clover. The Sugar-Beet, however, lay at this temperature twenty-two days before beginning to sprout. At 11° the time was shortened about one-half in case of the seeds just mentioned. Maize required eleven, Kidney-Beans eight, and Tobacco thirty-one days at this temperature.

PROPER DEPTH OF SOWING.

The soil is usually the medium of moisture, warmth, &c., to the seed, and it affects germination only as it influences the supply of these agencies; it is not otherwise essential to the process. The burying of seeds when sown in the field or garden serves to cover them away from birds and keep them from drying up. In the forest, at spring-time, we may see innumerable seeds sprouting upon the surface, or but half covered with decayed leaves. While it is the almost universal result of experience in temperate regions that seeds germinate most surely when sown at a depth not exceeding 1 to 3 inches, there are circumstances under which a widely different practice is admissible, or even essential. In the light and porous soil of the gardens of New Haven, Peas may be sown 6 to 8 inches deep without detriment, and are thereby better secured from the ravages of the domestic pigeon. The Moqui Indians, dwelling upon the table lands of the Colorado, deposit the seeds of Maize 12 or 14 inches below the surface. Thus sown, the plant thrives, while, if treated according to the plan usual in the United States and Europe, it might never appear above-ground. The reasons for such a procedure are the following:—The country is without rain, and almost without dew. In summer the sandy soil is continuously parched by the sun at a temperature often exceeding 38° in the shade. It is only at the depth of a foot or more that the seed finds the moisture needful for its growth—moisture furnished by the melting of the winter's snow.* R. Hoffmann, experimenting in a light loamy sand upon twenty-four kinds of agricultural and market-garden seeds, found that all perished when buried 12 inches. When planted 10 inches deep, Peas, Vetches, Beans, and Maize alone came up; at 8 inches there appeared, besides the above, Wheat, Millet, Oats, Barley and Colza; at 6 inches those already mentioned, together with winter Colza, Buckwheat, and Sugar-beets; at 4 inches of depth the above and Mustard, red and white Clover, Flax, Horseradish, Hemp, and Turnips; finally at 3 inches, Lucerne also appeared. Hoffmann states that the deep-planted seeds generally sprouted most quickly, and all early differences in development disappeared before the plants blossomed. On the other hand, Grouven, in trials with Sugar-Beet seed, made, most probably, in a well-manured and rather heavy soil, found that sowing at a depth of ⅜ to 1¼ inches gave the earliest and strongest plants; seeds deposited at a depth of 2½ inches required five days longer to come up than those planted at ⅜ inches. It was further shown that seeds sown shallow in a fine wet clay required four to five days longer to come up than those placed at the same depth in the ordinary soil. Not only the character of the soil, which influences the supply of air, and warmth, but the kind of weather which determines both temperature and degree of moisture, have their effect upon the time of germination; and since these conditions are so variable, the rules of practice are laid down and must be received with a certain latitude.—"*How Crops Grow.*"

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* For these interesting facts the author is indebted to Professor J. S. Newberry.

THE PLANTING OF THE LONDON SQUARES.

THE PLANES IN MECKLENBURGH SQUARE.

In "Squares" where the space enclosed by houses is of sufficient size, large trees produce a very fine effect; and some kinds, if well planted, thrive with sufficient luxuriance, notwithstanding the smoky atmosphere, to render the embellishment of every available space, even in the densest parts of the metropolis, with the pleasant aspect of masses of foliage, by no means a hopeless undertaking. Deciduous trees of hardy character, and such as are able to resist the impurities of the London atmosphere, are the best suited to such situations; evergreens having been found, since the vast increase of smoke-emitting chimneys, quite unequal to the contest with the soot of the great city. When our celebrated horticulturist, Loudon, first came to London nearly three quarters of a century ago, as an enterprising young Scotsman seeking his fortune, he at once scanned with the keen eye of an enthusiastic landscape gardener our attempts at keeping up the illusion of a little refreshing greenery in and among our great wilderness of brick and mortar; and, clearly perceiving that the effort to keep the plantations of the squares attractive in winter as well as summer, by means of evergreens, was a failure, he at once denounced the futility of planting Spruce Firs, Yews, Laurels, Boxes, Arbor-vitæs, and, indeed, all such evergreens as he found in common use. His remarks were so well founded, that they attracted almost immediate attention, and were evidently acted upon with very little delay, for the planting of nearly all the finest deciduous trees which now ornament our squares took place about that time. When speaking on this subject in after years, Loudon used invariably to bring forward, in support of his theory that evergreens will not live in London smoke, the following illustrative anecdote:—There was a time, he would say, when not one of the scores of churchyards within the precincts of the City was without its Yew trees—young or old—some of them, doubtless, of great antiquity, and many of more recent date; but, in consequence of the introduction of coal fuel, and the vast, though gradual, increase of coal fires, not one of those Yew trees, not a single one—young or old—is now to be found; while in the surrounding villages, wherever they are sufficiently distant to be out of the reach of foliage-killing soot deposits, there are venerable Yews, still in a vigorous, green old age, that date from the times of the Heptarchy. Now, had the trees sacred to churchyards happened to be deciduous trees, such as the Planes, the Elms, and several others, which, to a certain extent, defy the blighting influence of the metropolitan smoke, many of them might have been still in existence at the present day, notwithstanding the ever-increasing number of smoke-breathing chimneys.

The big Planes of Mecklenburgh Square, represented in our engraving, bear witness to the smoke-defying powers of that noble tree; and there are other deciduous trees in the same enclosure which seem, Mark Tapley-like, to be enjoying themselves amazingly under the murky circumstances. It having been ascertained that the Plane and several other kinds of handsome deciduous trees will thrive well in our squares, the next consideration is, how to plant them with the greatest advantage, in reference to such situations as those of the railed-in spaces of our town squares. There are some undeniable advantages in planting them next the railings. For instance, during the heat of a London summer, when at mid-day the pavements, heated by the full glare of the sun, get so hot that they seem to scorch the soles of one's feet, like the scoriæ of Vesuvius round about the crater, large trees close to the railings of a square cast their broad shadows across both foot-path and carriage-way, and make it far pleasanter walking or riding in the comparative coolness of the chequered shade. But then, on the other hand, by planting trees and shrubs immediately within the railings, the view of the interior of the square is shut out from the public; and then arises the question whether the plantation is to be considered as existing only for the advantage of the inhabitants of the surrounding houses, or whether, in so far as a good view of it is concerned, the enjoyment of the public ought, or ought not, to be considered.

If, instead of a dense hedge of shrubs, flower-beds and

LARGE PLANE TREES IN MECKLENBURGH SQUARE.

turf were made to occupy a broad belt of space near the railings, they would form very pleasing objects, and be in full view to every passer-by who might pause and admire them, and experience a pleasant, if but a momentary, sensation, in the haste of his bustling rounds on those hard matters which concern the daily business of life. It would seem that this would not very much interfere with the rights and privileges of those who had the *entrée* of the interior, and one would think that on humanitarian principles they could not object to it. Supposing this arrangement of turf and flowers carried out in a broad strip of the space next the railings, the large trees might be made to form a noble irregular group in the centre, with one or two isolated Planes picturesquely placed in different positions, not so far from the central masses as to produce a spotty effect. This general arrangement of the plantation of a square, varied according to circumstances, could not fail to produce pleasing results. It might also be modified to some extent by planting the larger trees (without accompanying shrubs) next the railings, so as still to throw their pleasant shades over portions of the roadway; but not allowing any dense shrubs in that situation, as seen in our engraving, in which position they entirely obscure the view of the interior. By their removal the trunks of the larger trees would not seriously impede the view across the enclosure, which would be seen beneath their branches, the lowest of which would almost in every case be above the eye line of the spectator. The central mass might then be formed of an irregular group of shrubs of moderate height, and round about it a broad border of flowers; and there might also be a few detached flower-beds in such well-selected situations as would be free from the shadow of the large trees next the rails. In short, many successful methods of planting the squares might be adopted, almost any of which would be preferable to the poor and uninteresting arrangements that generally prevail. H. N. H.

THE LIBRARY.

THE ORCHARDIST.*

This is a volume with which every gardener should be acquainted, and which is, in its way, unique among English publications. It contains descriptions of all our hardy fruits, and much other cultural and interesting matter about them. The following extract will show the practical nature of the work; but it is for its capital descriptions of all the really useful kinds of hardy fruits that it will be chiefly valued.

MAKING AN ORCHARD.

It will, perhaps, be of service to some if I here give a few hints on making and planting an Apple orchard. To succeed well in forming a good orchard, it is necessary that the soil be of such a nature that the Apple may grow in it freely; and, if it is not naturally good, it ought to be made so by artificial means, as the size and flavour of the fruit will depend upon the health and vigour of the trees. Trenching the ground is the method generally resorted to for improving the staple of the soil; but, where this is necessary, it ought not to be done too deeply; it is better to add to the surface a sufficient depth of such earth as may be required, and then to dig the whole deeply, taking care to plant the trees on a slight elevation or mound, which will contribute much to their health and strength. Climate, situation, &c., affect fruit trees, but not generally to such an extent as the soil—if that is not genial, no climate or site will be of any avail. The soils in this locality, where the best cider is made, are of strong alluvial deposit, with naturally well-drained or porous subsoil, such as neither wet nor drought affect much. If the ground intended for orcharding is not naturally in that condition, it ought to be made as nearly like it as possible by deep digging, manuring, and draining, and, in the case of light soils, the addition of some good strong clay; for when the soils are too light, a thin watery cider can only be obtained, and a great depth of soil is not so essential as that it be strong, good, and well drained. With the Apple, as with all other fruit trees, the nearer the surface the roots can be induced to run, so much the better chance of well-ripened wood, without which all cultivation will be nearly thrown away. Short, firm, well-ripened wood should be the great object aimed at; if this be obtained, the fruitful result will follow. The situation for an orchard should not be in too low-lying ground, in valleys, or near rivers or streams of water. Such are generally unsuitable places, as the vapours arising from them in the night get condensed upon the cold foliage and flowers of the trees; and, should frost follow in the morning, which it frequently does at the blossoming season, then the young embryotic fruit runs great danger of getting cut off. Such situations should, therefore, be avoided as much as possible. On the other hand, if the trees are planted upon too high or exposed places, then they are subject to have their crops blown off before they become ripe, and are in that way rendered useless. Gently-swelling hills and slightly-elevated places facing the S.E., S., or S.W. are the best, especially if sheltered from the N. and N.E. winds. After your soil, &c., has been properly prepared, it will be necessary to procure the sorts of fruit trees you wish to grow from some well-known respectable nurseryman, to whom it is generally the best plan to state what form of tree you require, leaving to him the selection of sorts. If he is a good pomologist, he will be able to advise you better than if you were to make a haphazard choice of your own. On receiving trees from the nurseries, never leave the roots exposed an instant; and, on purchasing, bargain to have them well secured from dry and cutting weather, for hundreds of fine trees are annually so injured by injudicious exposure, that they require years for their recovery. Farmers, I may say, are generally remiss on this point, hence the numerous complaints about trees not doing well. I never allow a tree to have its roots exposed above a few minutes. When taken up for sale, they are carried immediately to the packing shed and the roots at once secured. If the purchaser were equally careful, we should hear of very few trees doing badly.

The best season for planting an orchard is October or November—the earlier in autumn the better; if the work is delayed until spring, a year is lost. I therefore say, from my own extensive experience, plant early in autumn; but be sure, when you select your trees, that you bargain with the nurseryman to pluck off all the leaves as soon as the trees are taken up. This simple precaution will prevent the bark shrinking and evaporation of the sap, so that the tree, when planted again, will not require to draw so much from the soil at first, before it has had time to develope fresh roots. I have for many years practised this system of defoliation, and have always found it useful in promoting the early rooting of the trees. In my experience as a nurseryman, I have always found it beneficial to take up my trees and lay them in by the heels some time before planting again. The *rationale* of this is that the trees get gradually accustomed to less nourishment, and therefore, when replanted, easily obtain enough to support them. By so laying them in scarcely one in a thousand will die; whilst, on the other hand, trees freshly lifted, and immediately transplanted, will have a great many deaths amongst them. In 1860 I had some thousands of Pinus austriaca to plant. A great portion of these, about one-half, had been taken up and laid in by the heels for several weeks, while the other portion were taken up and at once planted along with those which had been laid in, although separate from them; the result was that the laid-in trees all lived, and half of the fresh transplanted ones died! This is one instance; but such cases are constantly recurring in a nursery, and the same thing happens in forming plantations where the planter uses trees just freshly lifted. It is always best to have the trees left heeled in, or to have their roots covered up for a while with any short damp litter before replanting; I am certain it would save many hundreds that would otherwise die. Apple trees, of course, are best treated in the same way. Always avoid deep planting, especially in cold or damp soils. Raise the tree upon a little mound in such soils; in fact, it is best to do so in any kind of soil. In planting orchards, it is necessary to have the holes or pits into which the trees are to be put somewhat wider than the roots extend, so that these last may be spread out evenly and horizontally: this will tend in a great measure to prevent their rooting too deeply, and will also promote fruit-bearing by causing the branches to be better ripened, and the fruit-buds to be better matured.

Under the title of "Herbarium Mycologicum Œconicum," Herr F. Baron Thümen, of Teplitz (Bohemia), advertises the commencement of an extensive collection of dried Fungi, especially of such parasites as are injurious to cultivated plants. He considers it very desirable that a better knowledge of these enemies should be disseminated in this way, amongst horticulturists, while he proposes that the collection shall ultimately include every species of Fungus, edible or otherwise. These dried specimens are offered for sale at the rate of 3 thalers (9s.) per fascicule of 50 species, and can be obtained only by sending the amount to the collector, at the above address. The first instalment of the collection will not be ready for distribution before the latter end of this year.

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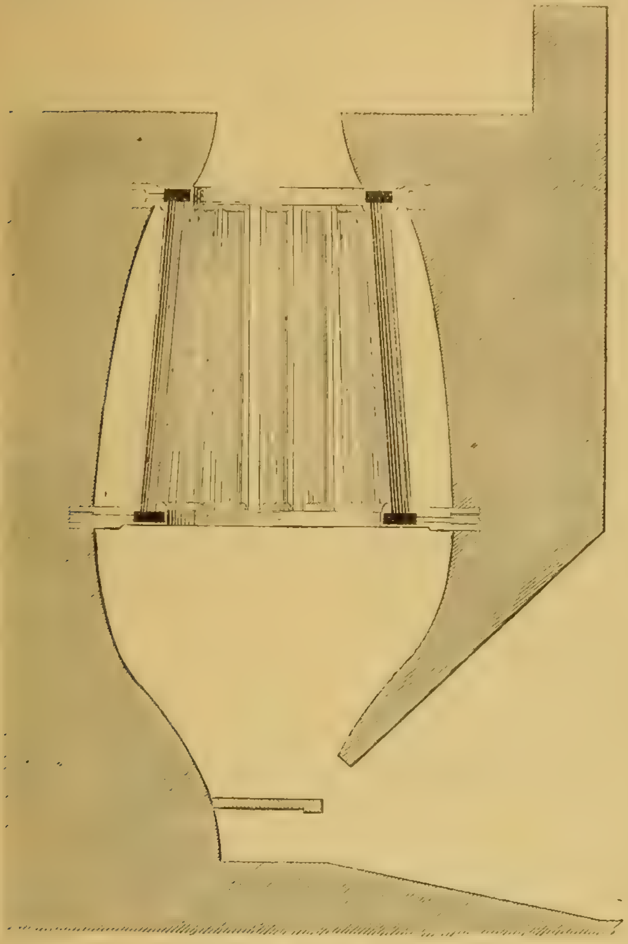
* The Orchardist. By J. Scott, The Nurseries, Merriott, Somerset.

LIME-KILN HEATING.

As you are aware, the idea of heating hothouse boilers by means of a lime-kiln is not altogether new. We have worked one here successfully for nearly four years. When I say *successfully*, I mean comparatively so—that is to say, we managed to do our heating 50 or 60 per cent. cheaper than when we burned only round coal. As to having the fire free of cost, I do not think it possible—in this locality, at all events. The kiln we have worked hitherto is 3 feet 6 inches diameter, and 12 feet high. The boiler—a horizontal tubular one—is 4 feet high, and encircles the kiln near the top. This kiln consumes, on an average, 2 tons of culm per week, and 3 tons of stone; it produces about 24 barrels of lime. The net expense is easily calculated :—



Mr. Colles's Lime-Kiln Boiler.

	£	s.	d.
Two tons of culm (at 8s. 6d.)	0	17	0
Three tons of stone (at 1s.)	0	3	0
Attendance three days (at 2s.)	0	6	0
	£1	6	0
Twenty-four barrels of lime (at 7d.) ...	0	14	0
Gives net cost per week	£0	12	0

(Or about 1s. 9d. per day.)

This kiln, we find, is able to heat 1,000 feet of 4-inch pipes sufficiently for ordinary forcing purposes. As we are heating over 2,000 feet of pipes at present, we were obliged to supplement it this spring with an ordinary 3-feet tubular boiler. This determined us to put up a larger kiln, which is now nearly finished, and of which the accompanying is a sketch. The height of the boiler is 7 feet, the diameter at the top 3 feet 6 inches, at the bottom 4 feet 6 inches. The entire height of the kiln, from the bottom of the ash-pit to the top of the brick-work, is 15 feet 6 inches; above this the external wall rises about 2 feet. The boiler weighs just 3½ tons, and will, I hope, be sufficient to heat at least 5,000 feet of 4-inch pipes. To put up such a kiln as this, you must have your houses placed on the summit of a rising ground of at least 20 feet.

Richard Colles.

Millmount, Kilkenny.

SOILS, MANURES, &c.

NEW METHOD OF ENRICHING STERILE SOILS.

Many horticulturists believe that it is impossible to grow plants in a sterile soil by means of artificial food composed of mineral substances dissolved in water. In a recent notable essay, a translation of which is presented by the *Chemical News*, M. J. Jeannel maintains (and he bases his conclusions on the results of experiments) that (1) nitrates or nitrites are naturally formed in soil containing organic vegetable matter when in contact with air. (2) That it is possible to feed plants with solution of mineral compounds suitably prepared, so that the plants receive from these solutions the mineral constituents they require, and may thus grow more vigorously even in pure sand than in the best garden mould. This opinion was put forth in 1856 by Boussingault, while experimenting on the growth of Helianthus. The eminent savant then said that the plant assimilates the mineral substances, and need not necessarily be placed in a soil containing decaying organic matter. And this opinion is also strengthened by the experiments of M. Ville, which prove the importance of chemical manures in agriculture. M. Jeannel states that he has utilized the views of Boussingault, Millon, and Schœnbein on the natural production of the oxygen compounds of nitrogen; and at the same time has modified them to some extent. He first studied the natural conditions of the formation of nitrates in arable soil, without the intervention of ammonia, simply from the elements of air and the reduction of these nitrates by humus. He applied Schœnbein's re-agent (solution of iodized starch acidulated with sulphuric acid), which strikes a blue colour in the presence of nitrates. By the aid of this re-agent he ascertained the following facts :—

When arable soil or garden mould is well washed in a displacing apparatus with pure distilled water, that fluid always exhibits the presence of nitrites. It is, however, necessary to use—for the complete removal of the nitrites from the soil—about twelve times the quantity by weight of distilled water to the weight of the soil experimented upon. The soil thus treated having been again dried, yields, after a short time, nitrites, as indicated by Schœnbein's test in the water employed a second time for exhausting the soil. Sandy soils, and all those which do not effervesce when treated with acids, do not recover nitrates after being dried unless carbonate of lime is added, and the soil then moistened with water and again dried, and lastly washed with distilled water, which then exhibits the reaction for nitrates.

When a solution of the nitrates of potassa and ammonia at 5-1000 is made to pass through the arable soil or garden mould, previously well washed with water, the soils being placed in a displacement apparatus, it will be found (as I also ascertained) that the nitrates are retained in the soil. One kilo (2¼ lbs.) of the soils—which require to be moistened with about half their weight of water—retains about four-fifths of the soluble salts contained in the first litre (1½ pint) of the saline solution at 5-1000, which is poured on to the soils. Nitrate of ammonia is retained by the soil in larger proportions than nitrate of potassa. The alkaline nitrates are, in twenty-four hours, reduced to nitrites when in contact with dead leaves, straw, or humus. That reduction is so marked that, when dead leaves are washed with distilled water, the leaves distinctly exhibit, with Schœnbein's reagent, the presence of nitrites, due to the nitrates naturally present in the well-water of Paris.

These facts appear, in the judgment of M. Jeannel, to lead to the following conclusions :—

(1.) Soils containing humus and lime determine, while drying, the combination of the elements of the air, without any intervention of ammonia, so that either nitric or nitrous acids are formed, which are at once fixed by the lime. This explains, not only the sterility of soils void of lime and of peat-bogs, but also the utility of liming the soils.

(2.) The nitrate of ammonia contained in rain-water and in dew (Millon and Schœnbein) is retained by the humus in the upper layer of the soil, with the nitrites constantly formed in the well-aërated and limed soil, according to the conditions of the atmospheric moisture or dryness.

(3) This constant formation and renovation of the oxygen compounds of nitrogen in soil containing lime and humus is a fact of great importance, which explains the exceptional fertility of the soil in alternate wet and dry weather, when frequent showers of rain

are followed by great heat, as was the case in 1872 (in France, at least). It also, in connection with the great affinity of the humus of soluble salts, more especially ammoniacal, accounts for the accumulation of fertilising principles in fallow lands, and at the same time shows the utility of mechanical operations in the soil, such as ploughing, digging, harrowing, &c., by which means contact with the air is increased and free access of air promoted.

M. Jeannel endeavoured to elucidate these theories by a series of horticultural experiments, specimens of the results of which he forwarded to the French Academy with the subjoined explanations:—

I. *Comparison between plants grown in sand and in garden mould.*—The plants placed in sand have been supplied every week, in addition to receiving ordinary water, with a solution of a few grains of mineral manure dissolved in water. The plants placed in garden mould have only had common water. The pots were placed on saucers, in order to prevent loss of soluble salts. I exhibit, as specimens of this experiment, two plants of the Pelargonium zonale and two of the Agave corniculata, which in April last were all in the same stage of development. The Pelargonium grown in the sand is four times as much developed as that grown in garden mould, and has been constantly in bloom during the summer; the Agave grown in the sand is twice as large as that grown in the garden mould.

II. *Plants grown only in sand; but some watered with common water only, others with the mineral solution once a week.*—I exhibit here, as specimens, several Arum italicum, and state that I have, during the summer, made a large number of similar experiments with plants belonging to different natural families, such as Begonias, Tradescantias, Veronicas, &c. The plants grown without the addition of mineral manure are either dead or drooping, while those raised with the addition of that manure have grown magnificently.

III. *Plants grown only in garden mould, to some of which only common water has been given, and to others, in addition to that fluid, a quantity of mineral solution has been supplied weekly.*—As a specimen of the result of this experiment, I exhibit two specimens of Sedum acre, the plant which has received weekly three grains of the mineral manure solution having grown twice as much as the other.

IV. *Plants which have remained for two consecutive years in the same soil in pots.*—These, as far as they have been treated with my mineral manure, have grown so well that their size is altogether out of proportion with the pots which contain them. As samples I exhibit an Aspidistra elatior and an Arum esculentum.

The mineral manure which I use is made up according to the results of elementary analysis of farm-yard and other manure, taking into consideration that the arable soil, containing organic matter, acts constantly as a nitre bed, and thus fixes the elements of the air into combination. The manure consists of the following ingredients:—

Nitrate of ammonia	400 parts
Nitrate of potassa	250 parts
Biphosphate of ammonia . . .	200 parts
Chloride of ammonium . . .	50 parts
Sulphate of lime (gypsum) . . .	60 parts
Sulphate of iron	40 parts
Total	1,000

The salts should be pulverised separately, and then intimately mixed. I apply this manure in the following manner:—Dissolve 62 grains in 1½ pint of water; give to the plants, according to their state of development, every week from ½ lb. to 3 lbs. of this solution (equal to from 1½ gr. to 9 grs. of the salt in solid state). The compound costing at the rate of 1s. per lb., the minimum yearly expense of thus manuring a plant would consequently be only a little over a farthing, while the maximum cost would not exceed 3d.

Conclusions.—(1.) Plants can be fed by means of artificially made mineral solutions. (2.) Horticulture may greatly profit by this mode of growing plants, because it renders repotting unnecessary, and because the nature of the soil becomes a matter of entire indifference, provided it offers to the plants a proper and sufficiently permeable hold; while, lastly, the plants can be fed at will and when most convenient.

Application of Fibre of Agave.—One of the most recent applications of Agave fibre seems to be in the manufacture of a kind of square bag or basket, which was first seen a year or two since in toy shops, principally in the seaside towns. They have now become very general, and can be had at almost every hardware and toy shop. They are made chiefly of the twisted fibre of Agave americana, the principal part being of its natural colour, but a portion is dyed black, and worked in with it. Whether the fibre is prepared in this country into the fine strong cord of which these bags are made, whether the bags themselves are made here, and whether other strong fibres are used, are questions which some readers may be able to answer. There is, in the Kew Museum, a bag made of New Zealand Flax, which is similar in shape and size to those usually sold, but the material is not so closely worked.—*Journal of Botany.*

THE HOUSEHOLD.

CULTIVATING THE MOREL.

(MORCHELLA ESCULENTA.)

Being particularly fond of the odour of the Morel, the scent of which is almost as delicate as that of the Truffle, I decided, a few years ago, to establish a bed on my property in the country, and to cultivate the Morel in the same manner in which we cultivate our ordinary Mushroom (Agaricus campestris). I made up the bed in the following manner:—Two-fifths consisted of the manure of well fed horses, two-fifths of earth rich in ammonia, and one-fifth rotten wood. The bed being thus formed, I sowed it with fragments of Morels which I had gathered; but I was disappointed with the result. The bed being in a dark cellar was overrun by some Agaric, and I had only five Morels. I was not, however, discouraged; on the contrary, I replaced a fifth of the manure by a fifth of earth taken from the spot where I had gathered the Morels. The following year I obtained nearly 32 lbs. off a space of about eleven and a half feet square. The bed came into bearing about the first of April and lasted until the middle of July. After this I only found one or two now and then. The year after that the bed commenced to produce at the same time as the previous season, and proved sufficiently productive to more than remunerate me for the slight expense I was at in forming and maintaining it. I thought that after the third season the bed would be exhausted, so I made a fresh one on the same plan as the former ones, on which I sowed the fibrous germs which were found at the lower part of the Morels gathered from my last bed. I selected the small brown Morel for my beds in preference to the white one, which is larger, but whose scent is less delicate. The Morel, like the ordinary Mushroom, should be grown in darkness; but it requires more water than the common Mushroom, which must not, however, be allowed to remain for any length of time in the bed. To prevent this, I placed two wicker hurdles under the bed (which is only six inches thick), so as to enable the water to drain quickly from it. The water must also be carefully applied by means of a watering pot furnished with a fine rose. Morels may be easily dried and preserved without losing their fragrance, thus rendering continual production unnecessary. String them by the stems and hang them up in some dry place. Morels are very expensive, but they may be easily obtained and made more common by following the plan of culture just described, and they make as delicate a dish as the Truffle itself.—*Laurent Geslin.*

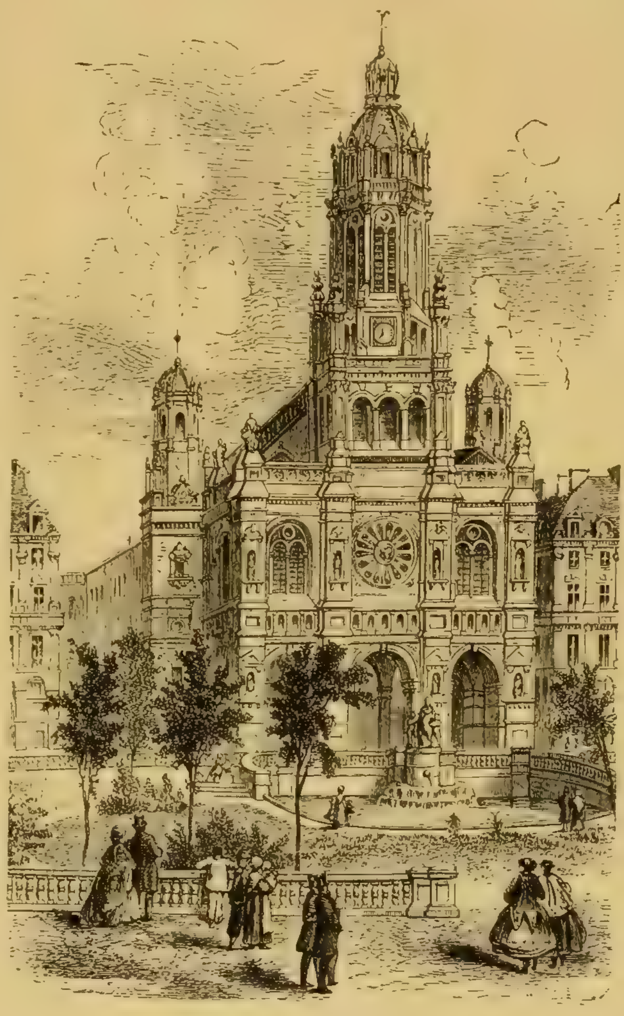
St. George's Mushroom (Agaricus gambosus.)—This delicious agaric, so well known in both France and Italy, occurs with us just now somewhat abundantly on the oolite. It affects fairy rings in the spring of the year, much as others do in the autumn. I will describe its aspect and habits of growth, so that even a novice may recognise it and not fear to use it, as offering a delightful and palatable dish. Very soon after St. George's Day the *mouceron* makes its appearance, and early in May its white caps may be seen peeping through the Grass. Its favourite growth is in rings, and sometimes a partial circle, sometimes a whole circle, may be traced by this agaric. The cap, as I said, is white, inclining to a buff, variously contorted, constricted by the roots and strong fibres of the Grass through which it forces its way. It clings somewhat closely to the sward, seldom rising in the early spring more than an inch above it. The cap, or pileus, is soft to the touch, and smooth. Here and there in the older caps a crack may be seen; that is a very characteristic marking in this agaric. The gills are at first pale, but age changes them to a light brownish hue as the fungus attains maturity. The stalk is thick and dumpy, and shows a tendency to the bulbous in a young stage of the Mushroom. The smell is strong, like the smell on entering a mill where Wheat is ground. These indices ought to enable anyone to recognise it at a glance, and, as it oft appears long before any other kind, there ought to be no difficulty or doubt felt about it. It may be cooked like the ordinary Mushroom, but it requires nearly an hour's cooking to render it tender and palatable.—Peter Inchbald, *Hovingham, near York, in "Field."*

Rhubarb Fool.—Cut the stalks into short lengths, then put them in a jar into the oven to draw out the juice. When that is done pour it through a hair sieve to strain into a basin, and when cold take as much of the juice as you require, mix with milk and sugar, and proceed the same as with Gooseberry fool.—S.

How to Bake an Apple.—To bake an Apple perfectly can only be done by giving it time, keeping it under heat—steady at that—for from four to six hours, depending upon the size and quality of the fruit. It requires this length of time to reduce it to a fine pulp and destroy all rawness. The flavour is changed and improved, making, if the Spitzenburg or some other good fruit, one of the choicest and daintiest of dishes. The point in baking is to give all the heat that can be borne without bursting the skin, thus retaining the moisture.—F.

CHURCHYARD GARDENS.

A movement has already set in in favour of planting the churchyards of our great towns and cities; but such planting is not always done with that degree of good taste which would ensure success. There are, for instance, a few trees scattered round St. Paul's; neither in the selection of the kind of trees, nor in their grouping or position, is there the slightest attempt to produce any of those pleasing effects which may be so easily achieved by a judicious combination of foliage with architecture. There can be no doubt that the beauty of the magnificent architecture of our great metropolitan cathedral might be considerably enhanced by a little tasteful planting, especially in the open space before the west front at the top of Ludgate Hill, and yet nothing whatever is attempted.


Garden and Church of La Trinité des Monts, Paris.

The position of La Trinité des Monts, at Paris, of which a spirited cut is here given, is somewhat analogous to that of our St. Paul's, and there is a detached group of statuary in front occupying a similar position to that filled by the statue of our good Queen Anne. The conditions being similar, why should not the combination of effects to be achieved by judicious planting be made equally effective and pleasing in both? At La Trinité well designed bands of turf are made to contrast their bright and lively green with the cool grey of the architecture, which serves as a charming monotone background to the gorgeous colours of the flowers, of which great masses vary the expanse of the soft green turf. Trees then begin to play their part, not blocking up the central view, but shading it off on either side, and pleasingly interrupting the continuous rigidity of the architectural lines, or the formal ornamentation of the stone carvings by the ever graceful irregularities of nature. The pleasing effects of a combination of architecture and foliage have been largely appreciated by many, though in most cases without seeking to define the nature of the combination by which the pleasing impression had been brought about. Such effects have, in fact, been in most instances in England the result of accident. On the building of a country mansion, for instance, it would be difficult to point to many examples in which trees have been designedly planted near the house with the view of creating a pleasing combination of art and nature by the studied juxtaposition of the architectural forms and the grouping of foliage. It is true that scores of examples exist, in park scenery, of magnificent effects of woods, slopes, and water, which frame in a mansion very magnificently; but they have either been the result of accident, or the park and the mansion have been two utterly distinct works, which, however, from the nature of things, could not under any circumstances prove altogether unsuccessful. But the planting of trees about town buildings is a somewhat different matter; and, to achieve a success such as that of the plantations of the Church of La Trinité, requires a special kind of study, without which good results cannot be expected. I have said that the relative positions of La Trinité and St. Paul's bear considerable analogy to each other; and, that being the case, it seems natural to ask why the surroundings of St. Paul's should not be made equally attractive by a little similarly careful planting of a suitable kind; which should of necessity be bold and stately in its character, in order to accord with the grandeur of the building itself. For instance, let us suppose the statue of Queen Anne to be considerably raised, on a highly decorative base, and let it be combined with a pair of magnificent fountains, of which the statue would form the central and most elevated object. Let the group of objects so formed be surrounded by an expanse of turf of corresponding outline, which should be bordered, within a low but massive stone coping, by a bold band of richly-coloured flowers. On either side of a broad paved or gravel walk, wide expanses of turf might be established, in which the judicious planting of groups of trees should be effected in such a way as would shut out, to a great extent, the view of the ignoble buildings which, on either side, crowd far too closely on the masterpiece of our greatest English architect, while, at the same time, they would soften, without concealing, the necessary formalism of the glorious mouldings, and ornaments, and statuary of the great cathedral, as the juxtaposition of the pleasing irregularity and untrained ramification of the branches of graceful-growing trees never fail to do.

It is to be hoped that, while so much is now on the *tapis* with regard to the decoration and completion of the interior of the building, that the necessary attention will also be bestowed on improving its external aspect by some such additions as those suggested. The Garden has already hinted at the creation of a cathedral garden round about St. Paul's, but it is difficult for such a cry to reach official ears, deadened as they are by the dull routine of daily business; while official eyes are so dimmed with the worry of examining the humdrum plans and proposals of daily necessity, that it is difficult to make such ears hear, or such eyes see, anything out of the beaten track of official drudgery; and one could scarcely expect it to be otherwise. Noel Humphreys.

Lime Concrete Walls and Walks.—These are made by mixing sifted sand with quick-lime, in the proportion of about fifteen to one, and thoroughly working them together with a hoe, occasionally sprinkling the heap. The mixture is then thinly spread upon the ground, and beat very solid with a kind of wooden peel, now and then wetting the place to assist the solidification. The materials for walls should be the same, but the gravel should be rather coarser. In constructing a wall boards should be set within posts on each side of the foundation just the thickness of the intended wall, and the gravel poured in, and pounded down solid with long heavy beaters. When full to the top of the boards, additional ones should be placed above them, and the process repeated till, by successive increments, the wall is finished. When thoroughly dry, it should be coated with coarse plaster for preservation from rain, and if the coating is well done, the wall becomes in time very hard and stony.

THE KITCHEN GARDEN.

GARLIC.

This, though a native of the Mediterranean region, has all the vigour of the hardiest and strongest northern herbs, and, though flourishing best in a dry fertile soil and warm situation, it will do almost anywhere. Plant the cloves, *i.e.*, the separated portions of the "bulbs," in shallow drills about a foot asunder, and 6 inches apart in the row, covering them with soil to the depth of an inch or two. Or plant whole bulbs a foot apart each way, and never deep, as wet is apt to get down among the cloves, causing canker and mildew. Merely stretch a line or measure; take the bulbs by the neck and press them half or say two-thirds into the soil. Then drop a pinch of fine sifted cinder ashes over them, to prevent worms from drawing them out of the ground. February is about the best season to plant them. A small quantity may be planted in autumn, if it is desired to have a stock early the following season. From this autumnal or, to speak more precisely, October planting, bulbs may be taken up for use early in the succeeding summer. Any time after the leaves turn yellow the crop may be taken up and dried, hanging it up in bunches by the stalks in any airy room. It requires no culture whatever, excepting to be kept free from weeds—if it be necessary to mention in connection with any one small crop what is a first necessity with all. In England Garlic is but little used in comparison with its immense consumption on the Continent.

Jas. Barnes.

POTATO CULTURE IN JERSEY.

Let us first consider how the cultivation is carried on, and afterwards cursorily examine its effects. The selection of suitable land is the first consideration. If the soil be what is termed of a warm nature, and with a gentle declivity southwards, so much the better. The next important point is the preparation of the soil; we do not now find it necessary to cultivate so deeply as was formerly the practice. When the ground has been ploughed and well harrowed, it is the general custom to spread well-made stable-manure on the surface, at the rate of ten tons per vergée*; no sea-weed is used, but a much more powerful agent has taken its place, namely, guano. The Potato rows are now closer than formerly; the planting takes place on large pieces, in the manner before explained, with the use of a small plough for making and covering the drills. As will be noticed, the manure in this manner is ploughed in with the sets; then, in addition to this, guano is used, very frequently at the rate of 200, or even 300 lbs. per vergée. Those unacquainted with the growth of early Potatoes will be amazed at this apparent extravagance of fertilising power; but extravagance it is not, as will be by-and-by perceived. The preparation of the plant intended for sets is of the utmost importance. Kidney Potatoes as a rule are planted whole, and the round varieties are planted in strong sets, with eyes from the crown of the plant. The Kidney varieties commonly planted are the Ashleaf, the Prolific, and the Winford, *alias* Early Fluke. The round varieties most esteemed are the Cherbourg *Trois Mois*, the Dalmahoy, and the Early Regents. Potatoes intended for planting should be dug before the haulm is entirely dried up; when dug they should be allowed to harden by exposure to the air and sun, occasionally turning them. Then at the fall of the year, if they are stowed away singly in layers on wooden floors it will retard too early a vegetation, which otherwise is frequently the case. By a little attention the tuber in this way is checked in its habit of early growth, and when the moment arrives for planting, it can, if required, be forced; but it is not often that any forcing is required, the eyes will break out into vigorous shoots, and when they are fully developed, say about half an inch in length, the tubers may be planted, taking care to place the shoots uppermost. In this manner one month at least may be gained in bringing the Potato out of ground. The preparation of the sets must be viewed as of primary importance, taking care always to select plants of good and early habit; this, together with a suitable and well-manured piece of ground, forms in fact the only secret in the culture of the early Potato.

The planting commences in January, and is usually all finished by the end of the next month. The next operation is the forking-up, or loosening of the ground between the rows; this is performed when the plants are fairly out of ground, either with the prong, the crook, or with a small implement in the form of a horse-hoe, usually drawn by two men. The soil being thus well opened, if not checked by frosts, which unfortunately is sometimes the case, the plants will grow quickly, so that by the middle of April they are all hoed up. In the early sheltered places some are much more forward, while in the later ground others are less so. The first lot of any importance is usually sent up to the London markets about the end of April. As time advances the business rapidly increases, so that, by the end of May or the commencement of June, in ordinary years, great activity prevails in connection with this trade. There is no season throughout the year in which the farmer is so busy as during the sale of his early Potatoes. A day is frequently of the greatest importance in the market value of the goods; and, therefore, no sooner do they approach maturity than all hands are fork in hand at the work. Many consign their produce to salesmen in London; the goods are packed in baskets or barrels, and forwarded by the steam-vessels which daily ply between this island and the English ports, and thence on by railway to their destination. Others sell to the merchants here, who also export in the same manner, but on a larger scale. These, with the rest of the community, have the advantage, by means of telegraphic communication, of knowing hourly, if necessary, the state of the London markets.

So much said respecting the time, the mode of culture, and the sale of the Potato; let us look back at the fields whence the Potatoes have been dug, and see what is there being done. Another crop is being sown to follow. It may be, if on a piece of ground which was cleared off early, that a late crop of Potatoes is being set; this certainly is only the exception—the rule is to have a succeeding crop of either Swedes, Mangolds, or Turnips; we have also seen Barley sown, but rarely with advantage. It will now be understood that the heavy dressing of manure used for the Potato is again to be called upon to supply nourishment to the succeeding crops, and what splendid produce of roots do we often see! During our experience in these matters we have invariably noticed that some of the heaviest and best returns of roots have been in immediate succession to early Potatoes.

In our remarks on the manure employed we have mentioned guano. We would observe that this article, so valuable to the farmer, was first brought to this island from Ichaboe in 1844, when its worth was much questioned and its use very little known; it is, indeed, comparatively only of late years that it has been extensively employed. Its effects are surprising: we have seen on the same piece of ground two plots, one dressed with good farm-yard manure, the other dressed and treated precisely in the same manner, but with the addition of guano at the rate of 300 lbs. per vergée, and the two planted with Fluke Potatoes, when a difference of more than 50 per cent. resulted in favour of the piece where guano had been applied. We have also observed that, where the Potatoes were allowed to remain long in the ground, the haulm on the plot where the guano had been applied continued longer to vegetate than on the other; and, finally, the haulm dried up somewhat in the manner before described. In 1867 there were imported to this island 379 tons of guano, and in 1868 the quantity amounted to 496 tons. It will be seen by this how much guano is now valued; and, as its particular employment is for the culture of the Potato, some approximate idea can be made of the quantity used for the crop. At the same time we must guard against drawing definite conclusions hastily on this point, as we know that guano is coming greatly into favour, and is used by many for Grass land in lieu of sea-weed; and, in a general way, if the farm-yard cannot produce a sufficient supply of manure to meet the farmer's wants, he has frequently recourse to guano to make up the deficiency.

By reference to the returns made here last year for the information of the Board of Trade, we learn that Potatoes occupied 5,129½ vergées of our land; and, as the whole superficial area of the island is calculated at 64,613 vergées, it follows that nearly one-twelfth part of the island's surface was devoted to the crop. Let us next see what has been the quantity of the produce exported from the island, and endeavour to compute what is the gross amount returned to the growers of Potatoes by the export of the year 1868. From the collective statements kindly placed at our disposal by the Custom-house authorities, the agents of the steam-packet companies, and merchants, we find the exports to have been as follows:—In packages, by steam-vessels to Southampton, Weymouth, and Littlehampton, 5,458½ tons. The first package left the island on the 19th of March; this was followed by another on the 24th, by four more on the 26th, by two on the 7th of April, by forty-three on the 21st of April, when the season may be said to have opened. On the 30th of the month the number swelled up to 143 packages. In loose cargoes by sailing vessels there were shipped for the following ports:—Plymouth, 31 tons; Newport, 276½; Southampton, 100¾; London, 469½; Cardiff, 505; Lymington, 10; Swansea, 917¼; Liverpool, 2½; Caernarvon, 6; Gloucester, 32; Sercq, 1; Barbadoes, 80; total, 2,431½ tons; thus giving a total of 7,890 tons, the value of which we deduce from statements of returns to have been as follow:—

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* 4½ vergées are equal to an English acre.

Produce shipped in packages, £44,131; Produce shipped in loose cargoes, £11,442; total, £55,573.

In taking into consideration the produce of the land on which the early Potatoes have been cultivated, we must not omit to add to the amount exported (which shows a gross return of more than 17s. 6d. per vergée on the whole area of the island for the export of Potatoes only), the quantity left in the island for the supply of nearly 60,000 inhabitants, and also the plant for the ensuing year. These two items must be very considerable. Moreover, we must add to the produce of the same ground the successive root-crops to which we have alluded, which enable the farmers to keep more of their holdings in Grass, and consequently to increase the number of their stock. Furthermore, let us not lose sight of the wonderful activity prevailing in these ports during the Potato season. Commerce, the twin sister of agriculture, is not without its share of benefit. Steam communication is doubled, and its advantages are extended to passenger as well as to cargo traffic. In a word, the whole machinery of business is at work, and its good effects conspicuously felt through every channel of the insular trade.

We close this report with the following tabular statement of exports, taken from published returns, of several preceding years, commencing with 1807, when Potatoes were first exported :—

Years.	Tons.	Years.	Tons.	Years.	Tons.
1807	600	1835	1396	1854	4330
1808	1407	1836	3701	1855	4197
1809	849	1837	10,951	1856	7236¾
1810	1362¼	1838	12,032	1857	4960
1811	1400¾	1839	14,041	1858	3093
1823	3689	1840	17,648	1859	2211
1824	5747½	1842	18,560	1860	2677
1825	5836	1845	3822	1861	2960
1826	2558¼	1846	5461	1862	2803
1828	8364	1847	6428	1863	3908
1829	3963	1848	5990	1864	6705
1830	9289	1849	4992	1865	3216
1831	2986	1851	5662	1866	4080
1832	5436	1852	3354	1867	6251
1833	1859	1853	3776		

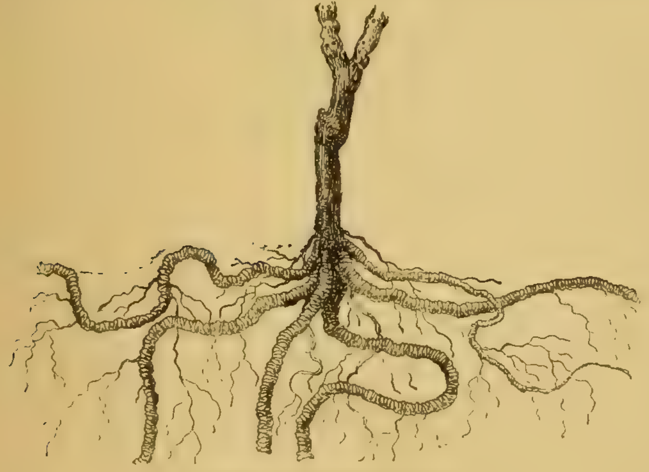
—*C. P. Le Cornu, R. Agri. Soc. Proceedings.*

THE PROPAGATOR.

PROPAGATION OF THE IPECACUAN PLANT.

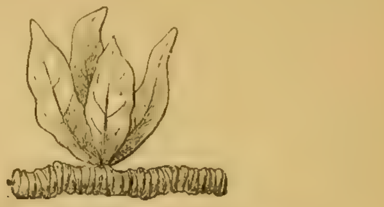
(CEPHAËLIS IPECACUANHA.)

This plant (says Dr. Balfour, in "Transactions of the Royal Society of Edinburgh") has been cultivated in the Edinburgh Botanic Garden for upwards of forty years, but it was not propagated to any extent until 1870, when a proposal was made to attempt the cultivation of the plant in India. This suggestion was made on account of the continued destruction of the plant by the collectors in Brazil, and the risk of scarcity in the supply of this most valuable remedy for dysentery. The Secretary of State for India, under the recommendation of several medical officers in Bengal, authorised an attempt to propagate the plant in our Indian possessions, and with that view application was made to me and others to aid in this important undertaking. Accordingly, I at once set about the propagation of the plant in the Edinburgh Garden, with the assistance of Mr. M'Nab. He found that the plant could be multiplied very rapidly by dividing the annulated root, cuttings of which, though very small, give off young shoots when placed in favourable circumstances. By this means, numerous plants were produced very rapidly, and the method was also followed by the Messrs. Lawson, who supplied a large stock of vigorous plants.



Roots of the Ipecacuanha plant.

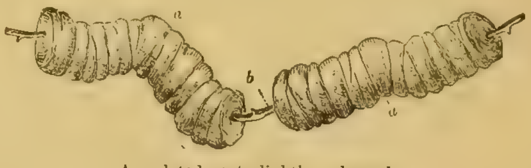
It appears from a report by Dr. King, director of the Calcutta Botanical Garden, that in 1866 a single plant of Ipecacuan was received at the Calcutta Garden from Dr. Hooker, but apparently artificial propagation had been attended with sparing success, as Dr. King reported at the beginning of 1872 that "the only surviving offspring of the Kew plant amounted to five plants in Sikkim, and seven in the Calcutta Garden." It is understood that cuttings of the stem were planted, but not of the roots. When, however, the plan proposed by Mr. M'Nab was adopted for the propagation of the plant, much greater success was obtained. In May 1871, a Wardian case was sent from the Edinburgh Botanic Garden containing twelve plants, and in October seventy-four plants were despatched. The greater number of these reached their destination in a good state. Since then 112 plants were sent in July, and sixty-eight in November, 1872, making in all during 1871-72, 300 plants.



Annulated root and leaf-bud of Ipecacuanha.

The original plant in the Botanic Garden had produced flowers on several occasions, but no fruit or seeds. The cuttings taken from its roots grew rapidly, and at the end of a year's growth many of them flowered, producing shrubby stems. Some of the plants assumed a branching habit, and attained a large size. The dimensions of the largest specimen in the garden are as follows:—Height, 16 inches; length of leaves, 6½ inches; breadth of leaves, 3¼ inches; length of peduncle, 1 inch; circumference of stem, three-quarters of an inch.

The following are the general characters of the plant cultivated in the garden:—Stem more or less shrubby when fully grown, simple or branching, with marks of the leaves giving a somewhat annulated aspect, varying in height from 12 to 16 inches. The young stem is herbaceous and quadrangular. The root is about the size of a writing-quill. It is well characterised by its irregularly contorted and annulated appearance. The roots spring from the lower part of the shrubby stem, and may be said to combine the usual functions of the root with those of the stem, inasmuch as they are capable of producing leaf-buds; when the root is cut into pieces, each portion produces a leaf-bud. A very small portion of root, not larger than one-eighth of an inch, is sufficient for the purpose of propagation. The outer or cortical part of the root is cellular, and has small projecting rings closely applied to each other. There is now a good stock of plants in India. Mr. Andrew T. Jaffray, in a letter to Sir Robert Christison, dated Darjeeling, 19th of September, 1872, states that by the end of the year he expects to be able to report that he has from 2,000 to 3,000 plants of Ipecacuan in cultivation.



Annulated root slightly enlarged.

Forests and Rainfall: A New Theory.—Experiments made by Von Pettenkofer on the amount of water evaporated from an Oak tree, show that atmospheric humidity, in so far as it depends upon the presence of forests, is promoted rather by the roots of trees drawing moisture from the earth, than by any attraction exercised on rain clouds by the leaves. The latter serve rather as outlets through which the moisture drawn from the soil passes into the air. The Oak tree observed by Pettenkofer was estimated to have 751,592 leaves, and the total amount of evaporation in a year was computed to be 8⅓ times more than that of the rainfall on an area equal to that covered by the tree, the moisture exhaled by the leaves being equal to 211¼ inches, while that from rainfall was but 25½ inches.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—Presuming that all the hardier bedding plants, such as Pelargoniums, Echeverias, Lobelias, &c., are planted, the more tender sorts, such as Alternantheras, Coleuses, &c., should now be put out, provided the situation is sheltered. Maintain neatness in the flower garden and pleasure grounds by means of frequent mowings, sweepings, rakings, and rollings. Thin out superfluous shoots of the finer kinds of shrubs, so as to invigorate the others, and from the trunks of trees remove sprayey shoots; also suckers from the roots. Apply a few neat stakes to tall-growing herbaceous plants, such as Pyrethrums, Phloxes, Pentstemons, &c., and likewise strong stakes to Hollyhocks and Dahlias. Tie up rampant shoots of Roses and give all choice kinds a syringe forcibly with the garden engine, to divest them of aphis, and if these or other insects are present in any great quantities diluted tobacco water should be used a night or two after the application of clean water. Propagate Pansies, Alyssums, Aubrietias, Wallflowers, and other plants from cuttings, under handlights, at the base of walls or in other sheltered places.

Greenhouse Soft-wooded Plants.—Keep up a succession of annuals, such as Balsams, Cockscombs, Schizanthuses, Brachycome, dwarf Asters, Mignonette, and others. For starting these, a little bottom heat is beneficial, and during all stages of their growth plenty of ventilation must be admitted, and abundance of water given. Than the scarlet Salvia fulgens and the blue S. patens, few plants are more beautiful, free blooming, and satisfactory, either in pots or planted out; they require rich soil and plenty of water, and by cutting off the spent flower-spikes and maintaining a regular supply of young wood they continue in excellent flowering condition until late in the season. Keep Pelargoniums and shrubby Calceolarias in open houses or frames, and give them plenty of water, but as soon as they come nicely into bloom remove them to the conservatory. Discard herbaceous Calceolarias when past their best, and if seed be required let it be saved from plants that have borne the finest formed and best marked flowers; place them in a cool and light house, and supply them moderately with water. Any suckers of Cinerarias ready for potting should now be removed from the old stock, potted singly in moderately rich soil in thumb or 60-sized pots, and put for a time in cold frames, placed so as to face the north. Repot Tree Carnations as they require it, and keep them in gentle heat, to bring them well into flower. Keep up a good stock of single and double flowered zonal Pelargoniums. Mulch Japanese Lilies in pots with decayed manure and turfy loam in equal parts, and introduce a few now and then to warmer quarters, to bring them into flower in succession. Shift Chrysanthemums into their flowering pots, and keep them in cold frames, or plunged out of doors.

Window Plants and Boxes.—Windows should now be gay with flowering plants, both inside and out. Such plants as are inside should be as near the glass as possible, regularly and well watered, but they should not be permitted to stand in pans or saucers of water for any length of time; their young growths should be pinched if they become too long. Myrtles, Camellias, India-rubber plants, Callas, and similar plants that have smooth and thick leaves should be gently sponged; but Pelargoniums, Heliotropes, most kinds of Ferns, and such plants as have hairy leaves, should be taken out of doors and sponged occasionally, in order to clear them from dust. Window boxes, if well drained, allow superfluous water to pass off freely; water may, therefore, be administered plentifully, without any fear of its stagnating about the roots. A good loamy soil, mixed with leaf-mould or decayed manure makes a good compost for plants in boxes. The beauty of Calceolarias is soon over, as is also that of several other flowers; therefore, some preparatory means must be adopted for supplying their places with fresh material, and for this purpose Pelargoniums, small plants of Acacia lophantha, Fuchsias, Nasturtiums, Lobelias, Mignonette, &c., should be held in readiness. Plants now in the boxes should be induced to display themselves to the best advantage, and for this purpose if a very narrow strip of wire netting be run along the top of the box and made to lean backwards, and another piece bent downwards in front, and some of the shoots of the plants attached thereto, a large and showy surface is obtained. Brackets and suspended baskets should likewise be well furnished with suitable plants, such as the hardier sorts of Adiantums, Polypodiums, Aspleniums, Aspidiums, Athyriums, Pterises, &c. Ivy-leaved Pelargoniums, Lobelias, Petunias, and the small-leaved dwarf-growing Ivies are also very pretty when used as basket plants.

Stove Plants.—These, as a rule, are now making free growth, and, consequently, should be kept moderately warm, shaded, and well watered. By running Dipladenias, Stephanotises, Clerodendrons, and Allamandas, on threads stretched across the rafters inside the houses, a greater quantity of bloom is produced on them than when their growth is more restricted. If required for specimen plants the strings may be cut down and drawn out from amongst the shoots, which should be carefully and equally trained around a trellis. Repot all young plants as they require it, and by plunging them for a few days afterwards in a gentle bottom heat the roots are stimulated into action. Attend to staking, tying, and keeping the plants free from insects. Ventilate moderately in the earlier part of the day, and sparingly in the afternoon; shade from strong sunshine, and with syringings and water sprinkled on the walls and paths keep up a moist atmosphere.

Orchids.—Steady heat, plenty of root and atmospheric moisture, but little ventilation, except during fine sunny weather, and shade are now necessary. Plants in bloom should be all placed by themselves if possible, so as to preserve their blossoms getting spoiled with water from the syringe, or they may be mixed with other flowering plants in the warmer portions of the conservatory or other plant-houses. If so transferred, after they have done blooming, bring them back to a cool shady part of the stove or Orchid house. Many Orchids, when in flower, last in beauty for weeks in a sitting-room, provided it is neither dusty nor subject to draughts; and, amongst these, Lycastes stand in the first rank, as do also Dendrobium nobile, Saccolabium guttatum, Odontoglossum Alexandræ, and other kinds.

Ferns.—These are now growing vigorously, therefore abundance of root and atmospheric moisture is necessary as well ss gentle syringings. Cheilanthuses, Gymnogrammas and other farinose Ferns, as well as Adiantums, should not be syringed overhead, such treatment being more injurious than beneficial to them. Sow spores under favourable circumstances, prick them off in little patches about half an inch or more apart after they appear, and pot all seedlings requiring it, as well as young and vigorous growing Ferns of all kinds. Thin out any old and decaying fronds so as not to impede the progress of younger ones. Replemish Fern baskets; seedlings inserted between the meshes of wire baskets give a good appearance to all suspended plant baskets.

Indoor Fruit Garden.—For Pines maintain a strong, moist, and steady heat; avoid draughts, and give just sufficient air to prevent too great a rise of temperature. Remove all strong suckers, pot, and start them in bottom heat. Gradually lessen moisture, both in the air and soil, where Pines are ripening fruits. Notwithstanding many instances of badly ripened Vines last year, through careful treatment, and slow and not too early forcing, the plants are bearing well this season. Thin the shoots and berries as required; only allow one bunch to each lateral, and pinch the shoot at the second eye beyond the bunch. If the borders are indoors see that they are thoroughly moistened. In the Peach house border watering must also be attended to, and liquid manure supplied now and then. Disbudding, syringing, and other daily operations will require attention. Top dress Cucumber beds, immediately the young roots are seen to be protruding above the surface, thin out superfluous laterals and decaying leaves, and always maintain a regular supply of young and good bearing wood. Never permit too many fruits to be on one plant at a time, as they only prevent each other's development. Syringe both Melons and Cucumbers twice a day with clean tepid water; but if mildew be suspected, mix with it a little flowers of sulphur. Strong and healthy plants militate against red spider; therefore manure water must be freely applied to Cucumbers. Melons ripening require to be kept a little on the side of dryness. Successions of Strawberries must be kept up by introducing from a cooler house to a warmer one, such plants as are bearing fruit. Prepare pots for runners for next year's plants, and plant out, on a warm piece of ground, plants that have lately been forced, giving them at the same time a good watering. In Pine stoves, or other forcing houses, near the glass have a successional supply of French Beans: they require plenty of water, as well as liquid manure, also syringing twice a day, and the minute red spider is discerned, let the plants affected by it be immediately discarded. Give plenty of air to Potatoes in frames, and water them moderately. Celery and Tomatoes in frames should be freely exposed, and planted out when convenient. Vegetable Marrows and Gherkins should be planted out before their roots become matted in the pots.

Hardy Fruit Garden.—Though there are fair prospects of a good fruit crop as a rule, yet in some places Pears, Apricots, and Peaches are thin; bush fruits and Strawberries look well. Disbud wall trees, remove blistered leaves from Peaches and Nectarines; train in shoots intended to be retained. Destroy aphis with tobacco-water, grubs and caterpillars by means of hand picking, ants by scattering some guano along the base of the walls, and mildew on young trees with flowers of sulphur. The ends of the shoots of fruit bushes are frequently infested with aphides, for which, if not too laborious, syringe with tobacco-water, pinch off the ends so infested and burn them, or with a brush like a painter's and a mixture of tobacco-water, soft soap, and a little of Gishurst's compound, rub off, and destroy the depredators. Gooseberry bushes should be well clothed with foliage, which is of material advantage in protecting the fruit from the sun.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

JUNE 4TH & 5TH.

THIS was one of the large summer shows, and was held under a tent on the terraced garden. Its chief features were stove and greenhouse plants, Orchids, Ferns, and new plants.

Stove and Greenhouse Plants.—In the class of nine stove and greenhouse plants, Mr. Baines was first, with a very fine group of nicely grown plants, among which were Azalea indica Mars, Phœnocoma prolifera, Boronia pinnata, Ixora coccinea, Dracophyllum gracile, Hedaroma tulipiferum, Aphelexis macrantha purpurea, Erica coccinea minor, and E. Cavendishii. Mr. Ward was second. In the class of six stove and greenhouse plants, Mr. Baines was again first, with an admirable group; Mr. J. Wheeler, Stamford Hill, was second, and Mr. G. Wheeler, Regent's Park, third. In the nurserymen's class of six plants, Messrs. Jackson were first, with large and densely flowered plants of Erica depressa, Aphelexis macrantha purpurea, Azalea variegata, Anthurium Scherzerianum, and Dracophyllum gracile; Mr. E. Morse was second. In the class of twelve plants, Mr. Ward was first, with a dozen well-grown medium-sized plants, one of which—Kalosanthes Frederick Desbois—was extremely brilliant.

Orchids.—These were particularly good. In the amateurs' class Mr. J. Ward was first, with good plants of Anguloa Clowesii, Cypripedium Stonei and villosum, Oncidium sarcodes, Phalænopsis grandiflora, Cattleya Mossiæ, and some varieties of Odontoglossum Alexandræ. Mr. F. Rutland, Goodwood, was second, with finely flowered plants of Cattleya Mossiæ, one of which had twelve flower spikes; Dendrobium densiflorum, with ten fine flower spikes; Cypripedium caudatum, and others. Mr. W. Cuthbert, Chase Park, Enfield, was third. In the amateurs' class for six, Mr. Hill, the Poles, Ware, was first, with half a dozen fine plants; Mr. Douglas, Loxford Hall, was second; Mr. Ward, third; and Mr. Cuthbert, fourth. In the nurserymen's class Mr. B. S. Williams was first, with a collection of wonderfully fine plants, consisting of Saccolabium retusum, Cattleya Mossiæ and lobata, Cypripedium caudatum, and barbatum superbum, Lælia purpurata with six flower-spikes, and others. Mr. Wm. Bull was second, with Cattleya Warneri and Mendelii, Lælia grandis, Eriopsis rutidobulbon, &c. Messrs. Jackson were third. In the class of six Orchids Mr. Bull was first, with the pretty Lælia majalis and L. purpurata; Cattleya Mendelii, Vanda suavis and Batemanii, and a good variety of Cypripedium barbatum. Mr. E. Morse was second. Amongst others he had a well-flowered example of Aërides Lobbii, Brassia verrucosa, and Stanhopea tigrina. Mr. Denning, Londesborough House, Norbiton, furnished a grand group of Orchids, in which were Masdevallia ignea, coccinea, Lindeni, Veitchii, Harryana, and Denisonii, all brilliantly in flower; a plant of Odontoglossum vexillarium in bloom; Dendrochilum filiforme, laden with drooping clusters of yellowish flowers; and several fine varieties of Cattleyas, Aërides, Vandas, &c. Messrs. Veitch and Sons showed a superb example of Odontoglossum vexillarium with two flower-spikes, each having half a dozen expanded flowers on it; likewise many other fine and especially new sorts of Orchids intermixed with their miscellaneous collections of plants.

Ferns.—Of these some very fine examples were shown, but none equal to half a dozen shown in the amateurs' class by Mr. Baines. These were immense specimens, fresh, and in fine condition; they consisted of Gleichenia rupestris and Speluncæ, both nearly six feet through, Cibotium princeps, with very large and spreading fronds, Dicksonia antarctica, Cyathea dealbata, and a fine tubful of Davallia bullata. Mr. Cole was second; amongst others he had a very fine plant of Asplenium Nidus Avis; Mr. T. M. Shuttleworth was third. Messrs. Jackson and Mr. Aldous, Gloucester-road, were amongst the successful contributors in the nurserymen's class. Collections of hardy Ferns consisted chiefly of Athyrium Filix-Mas and A. F. Fœmina and their varieties, Scolopendriums, Polypodiums, &c.; they were exhibited by Messrs. Jackson, Mr. Morse, Mr. James, and others. R. A. Thompson, Esq., South Kensington Museum, contributed a dozen varieties of Polystichum angulare found wild in Devonshire.

Palms and Dracænas.—Some beautiful Palms were contributed, especially amongst the miscellaneous collections. Mr. J. W. Wimsett was first in the nurserymen's class, with medium-sized plants of Verschaffeltia melanochætus, Areca Baueri, lutescens, and Verschaffeltii; Phœnicophorium Seychellarum, and Astrocaryum mexicanum; Mr. Aldous was second. In the amateurs' class, the first prize was awarded to Mr. Cole, who exhibited an excellent group, in which were Chamærops humilis, Rhapis flabelliformis, Latania borbonica, Seaforthia elegans, Areca lutescens and rubra; Mr. Hill was second, and Mr. G. Wheeler third. For a pair of Dracænas Mr. Bull was first, with two handsome specimens of the green-leaved D. lineata.

Succulents.—For Mr. Peacock's prize for 50 plants of these, only two collections were staged. The first prize group came from Mons. Pfersdorff, Paris, and consisted chiefly of Cereuses, Gasterias, Echinocacti, &c., many of them being great curiosities, from the way in which they were grafted. Mr. Ware was second with a collection of Sempervivums, Opuntias, and similar plants.

Roses.—In the class of six Roses in pots Mr. C. Turner, Slough, was first with fine plants, well furnished with large and fresh flowers; the kinds were Madame A. Duneau, Charles Lawson, Madlle. Margottin, Vicomte Vigier, Victor Verdier, and Juno. Messrs. Paul and Son were second with an excellent half-dozen Roses. For 48 trusses of cut blooms of Roses Mr. Turner was first, and Messrs. Paul and Son second, the blooms in both cases being remarkably fresh and fine. From Messrs. Mitchell and Sons, Maresfield, came two boxes of cut flowers of Maréchal Niel, all large and very fine blooms.

New Plants.—In the class of six, introduced by the exhibitor, and not yet in commerce, Messrs. Veitch were first, with Dipladenia insignis, Aralia elegantissima, Dracæna Baptistii, D. amabilis, Adiantum speciosum, and Tillandsia Zahnii. Mr. Bull was second, with Pritchardia grandis, Croton majesticum, Dracæna Goldieana, Encephalartos Jamesoni, Cycas imperialis, and Cyathea Burkei. For three new plants, introduced by the exhibitor in 1872-3, Messrs. Veitch were again first, with Odontoglossum vexillarium, Aralia Veitchii, and a Croton. Prizes were offered by Mr. Wm. Bull for twelve new plants introduced and sent out for the first time since the commencement of 1870. In the nurserymen's class for these, Mr. J. W. Wimsett was first with Maranta Makoyana, Kentia Canterburyana, Dæmonorops palembanicus, Dracæna splendens, D. Shepherdii, D. metallica, Pandanus Veitchii, P. decorus, Macrozamia corallipes, Curculigo recurvata striata, Dieffenbachia nobilis, and Guilielma utilis. Messrs. E. G. Henderson were second, with (in addition to some of the above) Nidularium spectabile, Dracæna concinna, D. Fraseri, D. pulchella, Maranta Seemanni, Pandanus Lais, and Aralia Guilfoylei. Messrs. Downie, Laird, and Laing were third, with (in addition to some already named) Dracæna illustrata and Alocasia Marshallii. In the amateurs' class for a dozen plants shown under the same circumstances, T. M. Shuttleworth, Esq., Harley-street, Cavendish-square, was first, with Primula japonica and Macrozamia spiralis eburnea; Mr. Croucher, gardener to T. Peacock, Esq., was second, with Pandanus ceramensis, Dracæna ornata, Cypripedium nævium, and Stadmannia amabilis; Mr. W. Carmichael, Crown Hall, Bath, was third, with Phyllanthus nivosus, Croton fucatum, and Alocasia illustris.

Cut Flowers.—For eighteen bunches of these, Miss M. A. Baines was first, with remarkably fine trusses cut from tender plants, consisting of Bougainvillea glabra, Stephanotis floribunda, Phajus Wallichii, Sobralia macrantha, Bouvardia jasminoides, and several kinds of Ixoras, Allamandas, and Dipladenias. Mr. Cuthbert was second; and Mr. E. Rowe, the Rookery, Roehampton, third. Mr. George, Putney Heath, was first for a collection of double-flowered Pæonies; and Mr. Ware second for Pæonies and first for double Pyrethrums; in addition to which he showed a stand of fancy Pansies, and one of the very dark self-coloured one, called Pluto. Messrs. Hooper and Co., Covent Garden, exhibited a wonderfully fine collection of blooms of Ixias, Tritomas, and other bulbous plants. Messrs. Veitch and Sons had a superb collection of Rhododendron and Azalea blooms; also a stand of blooms of other hardy shrubs, including a branch of the Fremontia californica, very thickly furnished with flowers; a branch of Viburnum plicatum, laden with masses of pure white Hydrangea-like clusters of flowers; and blooms of many other sorts of hardy plants. Mr. Rowe also showed a stand of Rhododendron blooms.

Miscellaneous Subjects.—From Mr. Wm. Bull came a grand collection of new plants; and Messrs. Veitch and Mr. B.S. Williams likewise contributed similar collections. Mr. Bull also showed a fine group of Cycads, and Messrs. Veitch and Sons a specimen of Lilium giganteum in bloom, and a group of standard Rhododendrons. Messrs. Noble, Bagshot, sent a group of Clematises and Spiræa japonica, and Mr. Cutbush, of Barnet, a basketful of Weigela hortensis nivea, a free flowering white flowered kind. Messrs. Standish and Co., Ascot, contributed a group of beautifully coloured Japanese Maples, several fine plants of the handsome white flowered Abutilon Boule de Niege, and a specimen of Passiflora vitifolia, with pretty red flowers. Messrs. Aldous and Co. furnished a good group of miscellaneous plants, and Messrs. E. G. Henderson & Son a group of Pelargoniums, Petunias, very fine Mimuluses, excellent varieties of Anthurium Scherzerianum, &c. Mr. Wm. Paul, Waltham Cross, furnished a fine collection of tricolor Pelargoniums and cut flowers of zonals. Mr. T. Pestridge, Uxbridge, likewise showed a group of fine tricolor Pelargoniums. Of Cycas revoluta, a specimen in flower, 8 feet in diameter, and bearing some seven dozen fine leaves, was exhibited by Mr. S. Woodford, Eastwell Park, Ashford, Kent. Several tastefully arranged vases furnished with flowers were exhibited, also an example of dinner-table decoration tastefully set off with artificial flowers. This was exhibited by Messrs. Adcock & Co.

Fruit and Vegetables.—Fruit was for the most part excellent in quality, but very few vegetables were shown. For three Queen Pineapples Mr. Hepper, the Elms, Acton, was second, the first prize being withheld; for a prickly Cayenne, Mr. Rutland was first with a fine fruit, Mr. Hepper being second. Grapes were remarkably fine; for a basketful not less than 12lbs. in weight, Mr. T. Bannerman, Blythfield, Rugby, was first, with fine bunches of Black Hamburgh, and Mr. Bones, Havering Park, was second. For a dish of Black Hamburgh Grapes Mr. Bannerman was first with three finely set bunches,—the size, colour, and plumpness of the berries being all that could be desired; Mr. Douglas was second, and Mr. J. Craven, Barnet, third. For a dish of any other sort of Black Grape, Mr. Bannerman was first, with very fine examples of Black Prince. For Frontignans or any round Grape having a Muscat flavour Mr. Bannerman was first, with Grizzly Frontignan, and Mr. D. Pizzey, Fulmer, Slough, second, with white Frontignan. For a dish of Buckland Sweetwater Mr Douglas was first, with well-ripened bunches; and Mr. A. Reid, Possingworth, was second. For any other white Grape Mr. T. Mills showed Foster's White Seedling, and Mr. Pizzey the White Muscadine. For a dish of Peaches Mr. Sage, Ashridge Park, was first with fine fruits of Violet Hative; Mr. W. Hill, Hale Hall, Stafford, was second with Royal George; and Mr Bannerman third, with the same sort. For a dish of Nectarines Mr. W. Gardiner, Lower Eatington Park, was first with Violet Hative; Mr. Miles second with Elruge; and Mr. Hill third. For a dish of Figs Mr. Sage was first with Brown Turkey; Mr. Miles, second with Brown Ischia; and Mr. H. Stapleton, Spring Grove House, Isleworth, third with Lee's Perpetual. Mr. Miles was the only exhibitor of Cherries; he showed a dish of very fine Black Circassian, and the same of Bigarreau, for both of which he had a first prize. For pale red and Pine flavoured Strawberries, Mr. Douglas was first with British Queen, Mr. Bones second with the same, and Mr. Stapleton third with Sir C. Napier. For dark red kinds, not Pine flavoured, Mr. Douglas was first with Premier, and Mr. Chard second. For a green or pale fleshed Melon, Mr. Miles was first with Hybrid Cashmere. Messrs. Gardiner, Earley, Cox, and Hall, showed respectively some good examples of late keeping Apples, and Mr. Reid a dish of Cape Gooseberries; Mr. Bennett, Hatfield, showed a dish of very fine Dr. Hogg Strawberries, and also some good Cucumbers. Messrs. Watts and Sons contributed some fine examples of their Northampton Hero Broccoli, which the Committee considered to be identical with the Leamington Broccoli, and which is one of the very best of Broccolis. Messrs. E. Francis and Co., Hertford, showed examples of Hill's June Broccoli, which was considered to be the same as an old variety of no great repute. Prizes were offered by Messrs. Carter and Co. for six dishes of Peas, to include Maclean's Blue Peter, Carter's White Gem, and Carter's First Crop Blue. For these Mr. G. Brown, Hawley Court, Henley-on-Thames, was the only exhibitor; and, as his Peas were exceptionally fine, they received the first award.

First-class Certificates.—These were awarded to the following:—

Dracæna Baptistii (Veitch), a strong-growing sort, with copper-coloured leaves, edged and flaked with red, the young leaves, being green, changing to copper colour with age.

Aralia elegantissima (Veitch), an extremely handsome sort in the way of Veitchii, but stronger growing; the leaflets, instead of being undulated, are deeply indented.

Tillandsia Zahnii (Veitch), a showy Bromeliad, the leaves being flamed with bright red, and the flower-spike yellow.

Dieffenbachia Braziliensis (Veitch), a showy plant, with habit somewhat like Bausei, and the ground colour a deep green flamed with yellow, in which small white spots are multitudinously scattered.

Veronica diosmæfolia (Veitch), a pretty dwarf, hard-wooded, greenhouse plant, with leaves like those of the Diosmas, each shoot bearing freely pretty heads of pale lavender flowers.

Anthurium crystallinum (Veitch), an exceedingly pretty-leaved kind in the way of grande, of a deep green colour, the larger veins being conspicuously marked like silver.

Phycella pulchra (Veitch), a pretty little Liliaceous plant, with red trumpet-shaped flowers that are greenish yellow at the neck.

Lælia Wolstenholmiæ (Veitch), a pretty Orchid, the flowers of which are of a whitish colour much suffused with violet, particularly the lip.

Croton spirale (Bull), a true spiral-leaved sort, very remarkable and ornamental.

Croton cornigerum (Bull); the leaves of this are somewhat like those of Weismannii in colour, shorter and broader in form, and curved like a horn.

Croton grande (Bull), a large, strong-growing sort, with deep green leaves, of which the midrib and principal veins are rose coloured.

Croton majesticum (Bull), a long-leaved graceful kind, with metallic green leaves striped and marked with yellow and rose.

Chamærops humilis variegata (Bull), a variety prettily variegated with yellow.

Bertolonia superbissima (Bull), an extremely pretty strong-growing plant, with large and distinct rose-coloured round spots.

Campsidium filicifolium (Bull), a pretty dwarf climbing plant, somewhat in the way of Paullinia Thalictrifolia.

Cattleya Mendellii (Bull).

Pritchardia grandis (Bull), an ornamental plant with broad undivided bright green leaves.

Dracæna rosea (Bull), a strong-growing sort, with metallic green coloured leaves, edged with red; the young leaves being almost pink.

Dracæna Goldieana (Bull), one of the most singular of all Dracænas; its leaves are short, broad, and borne horizontally on clean footstalks: their colour is deep green, barred zebra-like with silvery green.

Cyathea Burkei (Bull), a fine African Tree Fern, with a trunk a foot through and 4½ feet high, surmounted by a fine close head of well-developed fronds. A fine plant.

Coleus Verschaffeltii splendens (E. G. Henderson), a fine bright red variety.

Begonia vivicans (E. G. Henderson), a bright red, free-flowering, herbaceous sort.

Petunia The Shah (E. G. Henderson), a showy kind—violet, shaded with magenta, and rayed with white.

Pelargonium (tricolor) Miss Farren (Wm. Paul), a pretty silver tricolor.

Pelargonium (show) Triomphe de St. Maudé (Turner), a fine kind bearing large trusses of showy crimson flowers, apparently a good market variety.

Pelargonium (show) Constance (Turner), a finely-formed pale rose-coloured flower.

Pelargonium (show) Protector (Turner), a showy bright crimson-coloured sort, with white throat, and dark upper petals.

Pelargonium (show) Sunray (Turner), a showy red-coloured variety.

Pelargonium (show) Duchess (Turner), a finely-formed flower, not unlike P. Protector,

Pelargonium (show) Blue Boy (Turner), a distinct, large, and showy kind, with pale rosy violet lower petals and dark coloured upper ones.

Calceolaria (shrubby) Aurora (Dean), a good sort, with fine large trusses of bloom of a crimson colour, suffused with yellow.

Viola (bedding) Lothair (Dean), a promising dark violet-blue coloured Viola.

Lobelia pumila grandiflora flore pleno (Dixon) a pretty really double form.

Silene pendula compacta (Cole), a dwarf-growing, compact, free-blooming variety.

Verbena Edward Perkins (Perkins), a kind bearing large trusses of white flowers, with a rosy purple eye.

Odontoglossum Insleayii leopardinum, a dark brown coloured flower, barred with a paler hue; a fine and distinct plant.

Certificates were awarded to a few unnamed Pelargoniums, to which no exhibitor's name was attached.

MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY.

The annual Whitsuntide exhibition of this Society opened on Friday, May 30th, at the Botanic Gardens, Old Trafford, under the best auspices, as far as weather was concerned. Of fine-foliaged plants, a good group of eight was staged by J. H. Birley, Esq., Pendleton; these consisted of Seaforthia elegans, Cibotium Schiedei, Croton angustifolium, Theophrasta imperialis, Maranta fasciata, and Cordyline indivisa. In the class of six stove and greenhouse plants, the best group contained an enormous and finely-grown Gleichenia flabellata, G. dicarpa, very fine, G. dichotoma, G. rupestris, Davallia tenuifolia, and Brainea insignis. Hardy Ferns were well represented, and some nice Adiantums were staged in Class II. A grand group of twelve stove and greenhouse plants was staged in Class I. by Mrs. E. Cole & Sons. These consisted of Azaleas Conqueror, very finely flowered, Magnificent and Trotteriana, Hedaroma tulipiferum, Aphelexis humilis, and A. macrantha purpurea, Erica affinis, E. Lindleyana, finely grown and flowered, Statice profusa, a splendid example of Anthurium Scherzerianum, Pimelea mirabilis, and Epacris miniata rosea.

Orchids.—Of these, nearly 300 examples were staged, some of them of large size, especially some plants of Cattleya Mossiæ, of which a wonderful group was shown, not only of that kind, but also of its different varieties. The best twelve Orchids in the amateur class were contributed by Mr. Mitchell, gardener to Dr. Ainsworth, Manchester. They consisted of Aërides Lobbii, a fine Phalænopsis grandiflora, Cypripedium barbatum superbum with twenty-seven flowers, a magnificent example of Lælia cinnabarina, Phalænopsis amabilis, Oncidium sphacelatum with eight large spikes, Saccolabium præmorsum (very fine), the beautiful Lælia Stelzeriana, Trichopilia crispa, Oncidium sarcodes with three fine spikes, Vanda suavis, and a splendidly-flowered Saccolabium guttatum superbum. Mr. Hubbersty, gardener to O. O. Wrigley, Esq., was second with a large Phaius Wallichii, a magnificent Calanthe veratrifolia, Anguloa Clowesii, Cattleya Mossiæ (very fine), Dendrobium nobile, D. transparens, D. crepidatum, Cypripedium barbatum, a very fine Saccolabium ampullaceum (considered to be one of the finest examples ever seen), Aërides Fieldingii, and a fine young plant of Masdevallia Harryana, with five brilliantly-coloured flowers and several buds. The best six Orchids were staged by Mr. Williams, gardener to Jos. Broome, Esq., Didsbury. This group consisted of Oncidium sphacelatum (splendidly grown and flowered), Vanda tricolor, Lælia purpurata (very fine), Cypripedium villosum, Epidendrum prismatocarpum, and Dendrobium nobile. Mr. Wrigley, who was second, had a fine Cattleya Mossiæ, Dendrobium nobile (very fine), Anguloa uniflora, Cypripedium barbatum giganteum, Aërides virens, and an unnamed Dendrobium. The best three Orchids came from Mr. Wrigley; they consisted of Aërides Fieldingii, Masdevallia Harryana, and Anguloa Clowesii, with large and brilliantly-coloured flowers.

New Plants.—Amongst these were the new Anthurium crystallinum, which appears to improve each time it is seen in public; Phyllotœnium Lindeni, a stove Aroid which is so distinct in character as to be considered by the introducer likely to prove the type of a new genus; its leaves resemble those of a Caladium in shape, the ground colour being bright green, whilst the mid-rib and primary veins are of a silvery whiteness. These came from Mr. B. S. Williams. Messrs. Rollisson also contributed a group, which contained a new Æchmea, named bracteata, apparently very distinct in character, Todea intermedea, a species of Croton from the South Sea Islands, and others.

Miscellaneous Subjects.—Among these an excellent stand of bunches of cut stove and greenhouse plants was staged by Mrs. E. Cole and Sons; Pansies, by Mr. H. Hooper, Bath; superb examples of Maréchal Niel Rose by Mr. J. Cooling, Bath; and Tulips by Mr. Samuel Barlow. The large oblong tent, which has hitherto been such a prime feature of attraction at the Whitsuntide show, was on this occasion filled with Rhododendrons, planted out and charmingly arranged by Mr. Anthony Waterer. It was expected that the contents of this tent would have been in full bloom by Whitsuntide, but it will be another fortnight before the plants will have put on their best floral aspect. It promises then to present a sight that will doubtless be witnessed with unmixed delight by the inhabitants of Manchester.

COVENT GARDEN MARKET.

June 6th.

Prices of Fruits.—Apples, per doz., 2s. to 3s.; Apricots, 2s. to 3s. per doz:; Cobs, per lb., 2s. to 2s. 6d.; Cherries, per box, 2s. to 4s.; Gooseberries, per quart, 3d. to 6d.; Grapes, hothouse, per lb., 6s. to 15s.; Lemons, per 100, 6s. to 10s.; Melons, each, 6s. to 12s.; Oranges, per 100, 6s. to 12s.; Peaches, per doz., 18s. to 36s.; Pine-Apples, per lb., 8s. to 12s.; Strawberries, per oz., 6d. to 1s.; Walnuts, per bushel, 15s. to 30s.; ditto, per 100, 2s. to 2s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 3s. to 6s.; French, 4s. to 12s.; Beans, Kidney, per 100, 1s. 6d. to 2s. 6d.; Beet, Red, per doz., 1s. to 3s.; Broccoli, each, 6d. to 9d.; Cabbage, per doz., 1s. 6d. to 2s.; Carrots, per bunch, young, 1s., old do., 8d.; Cauliflower, spring, per doz., 8s. to 12s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 2s. 6d. to 4s.; Cucumbers, each, 4d. to 1s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 6d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 8s. to 12s.; button, per quart, 1s.; Parsley, per doz. bunches, 6s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 3s. to 5s.; Potatoes, new, per lb., 3d. to 6d.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Scorzonera, per bundle, 1s.; Shallots, per bunch, 6d.; Spinach, per bushel, 3s.; Turnips, old, per bunch, 6d., young do. 2s.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

THE DESTRUCTION OF PLANTS AT ALEXANDRA PALACE.

Our readers are already aware of the terrible fire which utterly consumed all but the outer walls of this vast edifice on last Monday, but the newspapers have taken no notice of the loss in valuable plants that took place. Fortunately the numerous exhibition plants shown here were removed, so that only the company's own plants were destroyed. The large number of massive vases erected for the company by Messrs. Austin and Seeley had just been nicely furnished with plants a few days before, and owing to the abundance of Palms, Tree Ferns, &c., the effect was even finer than at the opening show. It is needless to add that all these were utterly consumed, the vases in which they were arranged being split in many pieces. Only a week ago Mr. McKenzie had purchased £800 worth of Palms, Tree Ferns, &c., for the embellishment of the palace—these were all destroyed. The day after the fire we accompanied Mr. McKenzie in an examination of the ruins, and it was grievous to witness the remains of the many Palms, Tree Ferns, &c., here and there amid the chaos of massive iron girders and stays, all twisted and contorted as if they had been so many hoop-irons. Strange to say, the balls of the Tree Fern plants, and the stems of these and Palms seemed to resist the fire more than anything else. There was no trace of tub or leaf to be seen, but the balls were in many cases intact, and also the stem for the length of a few feet. Out of doors the shrubs and trees against the palace suffered, of course, as did the flower-gardens—those against the palace being entirely destroyed. As the whole edifice (900 feet long) was consumed in 90 minutes there was no time to save the more important plants. These would have taken many men to remove them, and all hands had to go to save the pictures. The Rhododendron show of Messrs. John Waterer and Sons, quite near the buildings, escaped without the least injury, which is the more remarkable as their ground was covered with canvas. We understand that no alterations as regard the shows, &c., will take place, and that preparations are already being made for the re-erection of the building. We are sure our readers will regret that such a great loss should have fallen on a company so likely to have done much for the improvement of horticulture, and will unite with us in hoping that the palace may rise again from its ruins more beautiful than before, and that Mr. M'Kenzie may yet see his commendable taste for high-class plant decoration illustrated in it to the full. Fortunately, a number of unique specimens of tree Ferns and Palms, recently purchased in Ireland, and now on their way home, escaped the general destruction. The large number of glass houses erected by the company are far removed from the main building, and are safe, so that we may hope the out-door gardening will go on without check. We may add that Mr. Ayres' "Alexandra Promenade," which stood within a few feet of the burning building (no person being able to approach within a hundred yards of it, the heat being so intense), sustained little or no injury, only a few squares of glass having been destroyed.

PLANT GROWING FOR EXHIBITION.

If ever the past—and, shall I say, present—advocates of chromatic flower gardening received a severe shock, it was at the Alexandra Palace Show on the 24th of May. There a profusion of glorious foliage, with a proportionate sprinkling of flowers, made one of the most effective exhibitions that has ever been seen. The effect of the foliage in toning down colour was never so apparent, for had the show been like those of Chiswick and "the Park" a quarter of a century ago, full of flaring banks of Cacti, Azaleas, Pelargoniums, &c., the effect, in that newly-decorated Palace, would have been perfectly depressing. As it was—though Cacti and Azaleas *en masse* were absent—there was a pleasing play of colour from one end of the building to the other, and nowhere too much. Still for all that, I missed many colours which I long to see. Where were the blues of Leschenaultia biloba, Hoveas, and Sollyas which we used to have? the bright orange of Podolobiums, Dillwynias, Pultenæas, Gompholobiums, &c.? the fiery scarlet of Cacti? the bright balls of Leschenaultia formosa? the bright rose of Boronia serrulata and Chorozema Henchmanni? the light airy grace of Gompholobiums, and, if need be, of Zichyas and Tropæolum tricolor? I should feel gratified by seeing the graceful Coleonema gracile as Mr. John Fraser used to show it; and I trust that Mr. Baines will some day put as much force into that fine old plant, Cyrtoceras reflexum, as he has infused into his grand two-year-old Ixora coccinea. The younger kinds of plants, however, must be the stepping-stones to greater variety in our exhibitions. Let them be shown the first year in 12, the second in 15, and the third in 18-inch pots, making it a cardinal point, the plants being equal in other respects, that the smaller pots should carry the palm, and then there will be something for the young cultivator to exercise his ingenuity on besides "bedding out." No one who recollects the gorgeous Heaths which Mr. R. May used to show year after year, and which subsequently passed into the hands of Mr. W. Quilter, of Norwood, will deny the fact that grand Heaths can be grown in small pots. Mr. May's plants were always superbly bloomed, and the colour perfect, and though the plants improved vastly after Mr. Quilter gave them a liberal shift and let loose their pent-up energy, that does not disprove the fact that Heaths may be well grown in comparatively small pots. Taken as a whole, the Heaths at the Alexandra Park Show were not good. Messrs. Jackson's have been for some time past the best; their E. depressa and its ally affinis being simply in every respect superb. Mr. Ward had a splendid plant of E. Massoni, but in many of his other plants the bloom was thin and feeble. Mooting this question to an old grower, he assured me that Heaths had either lost their force or that the peat now procured for them was not so good as used to be obtained a quarter of a century ago. There may be something in that; but still we have had peat of late years in which delicate Heaths have grown as well as could be desired. Peat in some instances may be poor, no doubt it is, but let it be understood Heaths do not object to liquid manure properly administered; on the contrary, they revel in such as is made from sheep-dung and soot or guano, if it is clear, sweet, and not strong. Soft-wooded Heaths, if well rooted, will be benefited by weekly applications of it during the growing season, and hard-wooded kinds may be allowed it occasionally, especially when making their season's growth. But to use manure-water successfully in the case of hard-wooded exhibition plants requires care. Nobody need expect that a sickly plant can be recruited by means of manure-water, though after it starts into new growth liquid manure often assists a plant exhausted by profuse and continuous blooming. The sparse blooming of the large Heaths this season has its cause, and that cause is doubtless want of constitutional force and proper maturation in the autumn. Fine and healthy foliage is a vast improvement to our exhibitions, and as so many people are now scouring the Cape of Good Hope let us look forward once more to having a re-importation of Banksias, Dryandras, &c., which in Aiton's time abounded so profusely at Kew; their silvery-tinted foliage would be a boon to our exhibitions of the present day. A.

From the report on the progress and condition of the Royal Gardens at Kew during the year 1872, just published by Dr. Hooker, it appears that the number of visitors to the gardens shows an increase of 6,000 over that in 1871, very nearly half the number being Sunday visitors. The acquisitions to the Museums have been considerable, and those to the Herbarium quite exceptional in magnitude and importance, including an extremely valuable presentation by the Rev. C. New of plants collected on the Alpine zone of Kilimanjaro, the only hitherto visited snow-clad mountain in Equatorial Africa; 2,000 Brazilian plants from M. Glaziou, Director of the Botanic Gardens at Rio de Janeiro; and a beautiful collection of Appalachian mosses from Professor Asa Gray of Cambridge, U.S. Among the publications issued during the last year, either officially or by private botanists working at Kew, are the commencement of the second volume of Bentham and Hooker's "Genera Plantarum," the sixth volume of the "Flora Australiensis," by Mr. Bentham; the first part of the "Flora of British India," by Dr. Hooker, &c.

NOTES OF THE WEEK.

—— The hardy Palm (Chamærops Fortunei) is now pushing out its flower masses about London, and the effect of the yellow unopened drooping inflorescence is very striking.

—— At the present time there are nearly 2,000 pots of the Vernal Gentian in bloom in Messrs. Backhouse's nurseries, York.

—— Last Wednesday's show at the Regent's Park was the most enjoyable we have seen during the present season. The old preference of the gardeners and the public for the "park" is easily understood at such a fête. Notwithstanding all our great flower shows and exhibitions in many more pretentious places than the Botanic Gardens, there is no place in which a flower show looks so charming as in the little garden so gracefully designed by Mr. Marnock, nor do any of the newer show-grounds look so well as his.

—— We were much surprised to see the prize offered by the Royal Botanic Society for fine-foliaged herbaceous plants given to a group of Caladiums, &c.! It is certainly unfair to word the schedule so carelessly as to induce competitors to show hardy herbaceous plants and Caladiums in the same class.

—— We regret to state that the exceedingly fine specimen of the Abysinnian Banana (Musa Ensete) in the Palm house at Kew is dying. It has not yet completed the development of its cluster of flowers, some of which at the base began to open twelve months ago. The death of the plant before the maturation of the seed must be a great disappointment, inasmuch as suckers are not produced by this species; therefore propagation can only be effected by means of seed.

—— The culture of the Euryale ferox has been resumed at Kew, where a plant may be seen in the same water-tank as that in which the Victoria Regia is growing. The leaves of this East Indian Nymphæaceous plant are rather smaller, but otherwise not very unlike those of the Royal Water Lily. They are circular, spiny above and below, and the under surface skin is purple, and the upper one green; it has also a tendency to flower in a younger state than the Victoria Regia.

—— Another addition to the number of metropolitan parks already in existence is that which is just on the point of completion at Deptford. It comprises a space of about 7 acres, situated in a portion of the town inhabited by the poorer classes, to whose service it has been dedicated by the owner, Mr. W. J. Evelyn, of Wotton, Surrey. Within its boundary is situated the ancient manor-house of Sayes Court, which has been restored, and the grounds around it, separated from the park, have been tastefully laid out.

—— A desire has been expressed by several florists in the neighbourhood of Birmingham to form a society for the encouragement of the culture of the Auricula. The members intend to confine themselves entirely to that class of flower, but do not wish to confine competition to that district; on the contrary, parties from a distance will be allowed to exhibit at the various exhibitions of the society, which is to be called the Birmingham Auricula Society. Its secretary is Mr. Geo. Sellon, 96, High Street, Birmingham, to whom all communications and suggestions respecting the best mode of carrying on such a society should be addressed.

—— A little open space in Smithfield, between Bartholomew's Hospital and the new meat market, has recently been embellished by a drinking fountain and statue, and a few beds and borders for flowers. This is what the papers describe as a new city park, and its name is said to be Smithfield Park! A disused bequest, of which the Corporation are trustees, has now enabled this to be done. Sir Martin Bowes, who was Lord Mayor of London in the thirty-seventh year of the reign of King Henry VIII. (1545), founded a charity partly for the benefit of Christ's Hospital, partly for St. Thomas's Hospital, and partly for the conduits of the City of London. The conduits having been discontinued for some time, the Corporation applied to the Charity Commissioners for liberty to erect this fountain and make the garden with the accumulated money, and the necessary consent was given. There are many close streets in the neighbourhood, from which the children have poured ever since the opening, which took place last week. We would suggest a little better protection to the beds, which are much overrun.

—— Among the many fine plants to be seen flowering at the present time on the rockwork at Kew will be found some interesting and rare kinds. Of these one of the best is Ranunculus cortusæfolius, a kind seldom met with, which produces large yellow flowers. There is also a good plant of Aquilegia aurea just commencing to flower, and the pretty dwarf Œnothera cæspitosa is likewise blooming freely, as are also the following choice plants, viz., Iberis jucunda, Veronica pectinata—one of the best of the dwarf species, producing a mass of pretty deep blue and white flowers—and Androsace lactiflora, apparently an annual species, with strikingly pretty white flowers. In the herbaceous ground, too, there are several interesting plants in great beauty at the present time, particularly the rare Dianthus brachyanthus; Silene maritima rosea, a distinct form with flesh-coloured flowers, Anthyllis Dilleniana, a pretty species with red flowers, which are produced in great abundance; a plant of the beautiful Aquilegia cærulea; Delphinium nudicaule, and several showy dwarf species of Astragalus, the best of which are purpurens and vimineus.

—— We hear of a Peach with a pyramidal or Lombardy Poplar-like habit, being raised in one of the Southern States of America. It is likely to prove welcome in the shrubbery.

—— Mr. Frederick William Rock, a native of Barnstaple, has offered, at a cost of about £2,000, to present the people of that town with several acres of land, to be laid out in the form of a park.

—— Mr. E. W. Hart says in *Nature* that the flowers of Viola palustris, which are nearly unicolorous with a few dark lines pointing to the nectary, are apparently scentless; but after standing for a short time in water in a warm room, they become quite sweet.

—— Several van loads of plants in flower, as well as fine-leaved and ornamental ones, are being sent from Kew to Buckingham Palace, by order of Her Majesty's Commissioners, to assist in its decoration during the approaching entertainment of the Shah of Persia.

—— Of the various hardy plants which adorn our gardens with their blooms at this season, none surpass the various species of Iris. Fine collections of these may now be seen in the Royal Gardens at Kew, as well as at most of our metropolitan nurseries, in which herbaceous plants are grown in quantity.

—— The Spignel (Meum athamanticum, Baldmoney) is the most gracefully-leaved and freshest-looking little plant now to be seen in the garden. It is a capital subject to plant here and there in borders, being so fresh an accompaniment to the early summer flowers.

—— One of the most welcome novelties we have seen at our flower-shows for a long time are plants of the hardy Equisetum Drummondii. They were grown in pots in frames, and were as graceful as the most elegant Ferns. It is probable they will become popular in our gardens, not only in the open air, but in the greenhouse at an earlier period.

—— Herbaceous plants were shown in very good condition in the Regent's Park last Wednesday. There is a marked improvement in growing these plants for exhibition, though much remains to be done. Some Alpine plants, plunged in mossy Saxifrage, which were in wide spaces between them, looked well. This will prove a very effective way of showing well-grown Alpine plants, as the pans would be effectually hidden, the effect of the flowers excellent, and the Mossy Saxifrages are easily procured.

Crystal Palace.—Tuesday was the nineteenth anniversary of the opening of the Crystal Palace by the Queen, and the authorities availed themselves of the occasion to hold a grand commemoration fête there. A handsome memorial of Sir Joseph Paxton, the architect of the building, was unveiled on the second terrace. The memorial, which has been erected by private subscription, consists of a colossal marble bust 8 feet high and 4 feet 6 inches at the base, carved in Carrara marble by Mr. W. F. Woodington. The pedestal is 11 feet square at the base, and 31 feet high, making the total height 39 feet from the ground. The lower part of the pedestal is in Portland stone; the upper part in Portland cement, in imitation of red porphyry. In the base four incised slabs of Cornish serpentine will be inserted, the first containing a diagram of the principle on which the building of the Crystal Palace is constructed, and the other the following inscriptions:—"Joseph Paxton, born at Milton-Bryant, Beds., 3rd August, 1803; died at Rockhills, Sydenham, 8th June, 1865." "The Crystal Palace was opened by Her Majesty Queen Victoria on June 10th, 1854." And "Si monumentum quæris circumspice." The whole monument is designed by and erected under the care of Mr. Owen Jones. The carving on the base is by Mr. Smith; the masonry and cement work by Mr. Charles Bool, and Mr. Enoch Bool. The memorial was unveiled yesterday by Lady Frederick Cavendish, as a representative of the ducal House of Devonshire, with which Sir Joseph Paxton was intimately associated. Mr. Scott Russell, as an old friend and colleague of Sir Joseph, made a speech of some length, which, except to the very few who were standing near him, was quite inaudible. In the course of it he described Paxton as a man of noble creative genius, who had devoted his highest energies to securing the well-being and the moral and mental improvement of the people, and added that a better or kinder friend, and a wiser man of business, never existed. Mr. Thomas Hughes, M.P., on behalf of the Crystal Palace Company, of which he is chairman, accepted the gift of the memorial from the subscribers, and expressed the public sense of the great debt of gratitude which they owed to Sir Joseph Paxton, without whose aid the Palace could never have been a success—if even it ever could have existed in its present shape.

THE ARBORETUM.

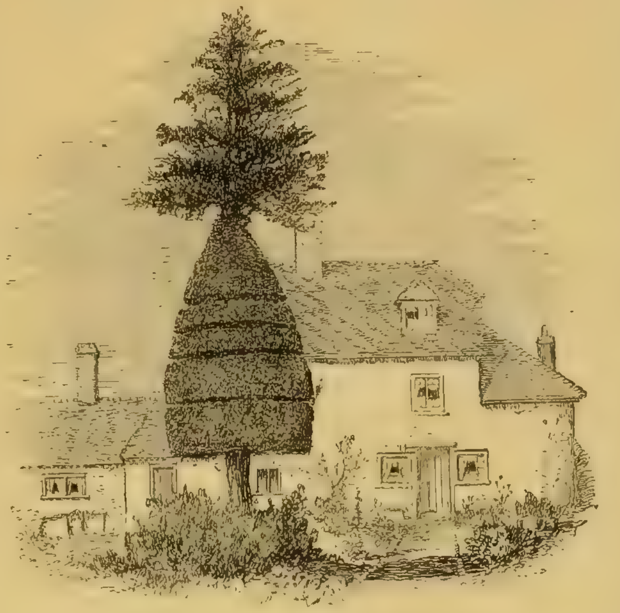
A FINE CLIPPED YEW.

When driving rapidly through the village of Mereworth, a few weeks ago, a very singular and imposing object met my eye, in the shape of the finest specimen of a clipped Yew I had ever seen. It stands in the cottage garden of Mr. Sudds, wood-reeve to Lord Falmouth, at Mereworth Castle, in the village of Mereworth. The illustration is a faithful reproduction from a photograph, and fairly shows the size and shape of the tree, which is remarkable for having, above the evenly clipped portion, a free, natural-looking top, 20 feet high, waving freely. Mr. Sudds writes: "I have clipped the tree myself once a year for thirty-five years. I cut it about the end of August, and after that date it makes no shoots till the following year. Its age is uncertain; the oldest inhabitant remembers it to be about the same size that it is at present." The bole is bare for 6 feet at the base, the clipped portion is 21 feet high, and the top nearly 20, making in all a height of 46 feet. W. R.

OUR NEWER CONIFERÆ.

BY ROBERT HUTCHISON.

The thirst for novelty, which may be regarded as one of the prevailing tendencies of the age in which we live, is no less conspicuous in the science of arboriculture than in any other department of the many and varied occupations which engross the mental and physical energies of the present day. As a consequence of this desire to introduce "something new," and to add to the numerous varieties of Conifers which are already well known, and ornament our Pineta and woodlands, the admirers of this interesting class of plants have been accumulating from all quarters, during the last thirty-five years, a hoard of seeds and specimens, both of Coniferous and hard-wood trees, which have been promiscuously planted by their introducers, unfortunately in too many cases without the slightest regard to their suitability to the soils and situations into which they have been imported. We need not wonder, therefore, if many of the efforts to introduce new varieties have proved futile, in so far as the capability of such plants to become valuable timber-yielding trees is concerned, or that the hopes of their planters should have been disappointed in finding that, after much expenditure of time and trouble, not to mention expense, they had obtained only shrubby and half-hardy evergreens where they had expected to rear useful timber trees. Several of the earlier introduced of these recent importations having, however, succeeded well in certain soils and situations, as we shall afterwards specify, arborists have profited by the experience thus gained, and it is satisfactory to observe that, adapting their operations to the requirements and habits of the Pines and trees which they wish to cultivate, planters are now becoming, year after year, more successful in rearing for ornament and use many of those rarer varieties which, some years ago, when less understood, were almost entirely neglected and looked upon as unsuited to the climate and vicissitudes of temperature of the British Isles.



Clipped Yew in Cottage Garden at Mereworth.

Taking the list of recently introduced Coniferæ, accompanying this report, as containing the principal varieties attempted to be acclimatised in Great Britain and Ireland, we may state that the efforts to introduce them have, upon the whole, proved more or less satisfactory and successful, and that in no instance have we discovered in our inquiries and investigations amongst the principal and best regulated Pineta throughout Scotland an instance of any one of the varieties named having been found unable to exist under the influence of our climate. The measure of success experienced in the trial of these new species in a country and climate hitherto unknown to them, as may be inferred from the foregoing remarks, has been very varied. But where attention has been paid to the rarer and more tender species, in the early years of their introduction, and until they had acquired some height, and become, as it were, established in the soil, there are many examples of their having not only thriven, but of their being now in such a condition as to justify the conclusion that they will hereafter prove valuable for shelter, ornament, and use. In many parts of England there are numerous old and consequently large specimens; for they have been much more generally cultivated south of the Tweed than would be at first supposed. In some instances their utility for economic purposes as timber has been already tried and approved; and in Ireland, where also these rarer Pines are better known than in Scotland, both climate and soil are well adapted for their healthy progress and vigour. Indeed in that country, as in England, there is a much greater number of old specimens than can be found, except in a few special instances, in Scotland. No doubt our Scottish friends have been deterred from trying these "new-fangled" trees from a belief which is still too prevalent amongst us, that most of these Coniferæ are unsuited to our climate so far north; an opinion quite at variance not only with all the experience we have been able to bring upon the matter, but simply absurd when it is remembered that many of the varieties have been introduced from habitats in a much more northerly latitude than that of the British Islands; and that a great bulk of those introduced are to be found in their native regions in latitudes almost similar to those of Great Britain, namely, from 50° to 60° north latitude. Such being the case, we shall in the present paper, in deference to this opinion, direct attention to the actual capability of these newer Coniferæ, &c., generally, for withstanding the vicissitudes of climate, and thriving in Great Britain, instead of giving individual returns of their exact growth and progress, quoted from the mass of information we have obtained and tabulated from many stations in all parts of the kingdom, in not a few of which instances we found that many of the species had already attained to what may be termed "timber yielding" dimensions, and are thriving vigorously. There are four difficulties to be contended against in relation directly or indirectly to climate, in the introduction and cultivation of the newer Coniferæ in this country, viz.:—1st. The tendency in many of the species to push forth their young buds early in spring, and to continue growing on late in the autumn. 2ndly. The variable character of the temperature of the climate inducing *uncertain* growths, and stimulating in an unequal degree in one season the strength and secretions of the plant. 3rdly. The fogs or hoar frosts to which we are so liable in spring and autumn, especially in the lower elevations, keeping the young wood and buds damp and unripened, and apt to suffer from the moisture becoming congealed into ice upon the branches and terminal shoots, which are thereby ruptured. 4thly. Wind exerts a very pernicious effect upon many of the newer Conifers, especially in a climate and soil untried by them hitherto.

In reference to the first of these difficulties which planters in this country have to contend against, we may remark that the growth which many of the varieties referred to—such, for example, as Wellingtonia gigantea, Abies Douglasii, Pinus insignis, and in some situations Picea nobilis—make in one season, is really marvellous. We have repeatedly seen from 3 to 4 feet of terminal shoot formed in a single year, and this rapid growth, at one time nipped by the frosty winds and nights of spring, and again suddenly checked by the cold of autumn, when in an unripened state, runs considerable risk of total destruction. Happily, however, this habit is lost to a great extent as the plants acquire stature and robust form, and if a little care be taken to shelter them amongst other trees as nurses, until their heads are reared above the dew-line, or hoar frost level, most of the species will withstand with comparative immunity the other extremes of our climate. The Pines most addicted to early growth in spring, and to late growth in autumn, are the Abies Morinda, Pinus cephalonica, Pinus Pinsapo, Pinus macrocarpa, and Pinus Lambertiana. With regard to the second difficulty mentioned, namely, the variable character of the temperature of Scotland, inducing uncertain growths, and exciting in an unequal degree in the same season the strength and secretions of the plant; in the very severe winter of 1860-61 we found many of the Pines named in the list appended to this paper standing the most intense degrees of frost, while the very same specimens have since been injured by the changeable weather of the spring months, becoming browned in foliage by the continuance of a frosty wind after genial open weather, the growth being doubtless impeded thereby. It is to this cause, we think, that the doubts as to the suitability in relation to climate of most of the newly introduced Coniferæ is to be ascribed, rather than to any uncertainty as to their ability to withstand with impunity the degrees of frost to which they are subjected in Scotland. For example, we found in the memorable winter of 1860-61 the Cupressus Lawsoniana at Oxenford Castle, braving uninjured the severity of that season, with the thermometer at its very roots indicating twelve degrees below zero, while the same Conifer has in several instances been found by us since then, browned by the frosty winds and nights of March and April. 3rdly. We stated that the recurrent fogs and hoar frosts of spring were prejudicial to these new Pines. In support of this statement we may mention that, in 1860-61, having had occasion very particularly to examine the state of trees and shrubs, we found that a greater number perished from the effects of the hoar frost and "häar" than from the severity of the frost itself. 4thly. Wind is another great enemy to the progress and establishment in this climate of these rarer trees, especially to those of the Coniferous order. Their evergreen foliage and heavy mass of branches exposed to the rockings of the blast prove most prejudicial to their progress and welfare. The roots become strained and loosened from the earth, and the spongioles of the rootlets ruptured by the oscillating motion of the plant overhead during the frequent gales to which they are subjected, rendering true the saying of a thoroughly practical forester, to whom we lately spoke regarding these newer introductions, which he had in large numbers under his charge, when he said, in reply to our question how his new Pines were thriving with him? "Oh! well enough, if the wind wud gae them peace!"

Another fruitful source of failure to many of the rarer Pines and trees is the practice of planting them when young in too rich soil. With mistaken kindness, they are often placed in leaf-mould, or in "rich" soil made up of decomposed vegetable matter. This only engenders filth about their rootlets and fibres, besides encouraging insect larvæ, which afterwards prove destructive to the young wood of the plant. Many of the species thrive best on a poor soil; for example, the Araucaria imbricata, which on a rich loam does not progress nearly so well as it does upon a cold thin soil in an exposed open situation. Among the hills and upper moorlands of Sutherlandshire, this Chilian Pine may be seen thriving vigorously; while in sheltered spots in a loamy soil it has often sustained much damage from the variations of the temperature of our climate. It is quite possible, however, to provide in a great measure against these evils to which our protégées are exposed, and it should be the earnest endeavour of every lover of such beautiful varieties to do his utmost to secure them from those dangers, which are almost the only ones to which, in this climate, they are liable. To remedy the first difficulty, let them be planted in back-lying situations, where neither early spring or late autumn growths will be encouraged; and to ripen the young wood as well as possible they should be placed in open situations, and not in too thick coverts. This will also, in some degree, obviate the second mentioned drawback to their healthy development. As to the remedy for the third objection their natures may have to our climate, it is obvious enough. The difficulty is purely local, and only holds good in very low valleys and inland elevations, where the sun shining brightly during the day thaws the ice upon their branches in early spring or even in winter, and where from lack of altitude the frosts of night are more intense than on the higher neighbourhood; generally speaking, the higher altitudes suit, for this reason, these Conifers best, and where lofty positions have been found tolerably sheltered from wind we have found the finest specimens. Wind is the only enemy to the Pine family, and indeed to trees generally, against which we have no certain remedy. To a great extent, however, with these rarer and finer varieties its ravages may be mitigated, if a little care be taken in selecting positions for them free from the gusts and blasts of the prevailing winds of the district. Further, in regard to the minor evil we named, namely, that of planting in too rich soil, we may remark that as each variety has its own chosen description of soil in which it thrives best (being its natural one) the custom of making up for its defect, by substituting artificially "made up" soil to promote the growth of the plant, is worse than useless, for after probably a year's growth it will be found that the rootlets have pierced beyond this artificial basin, and have penetrated into the natural soil of the locality, whether suited to them or not; and certainly in the same ratio in which they may have been artificially stimulated and pushed forward by the made-up fresh soil, will they, on finding their stimulant at an end or exhausted, be retarded by the sudden change or withdrawal of this auxiliary sustenance. A much better mode of aiding their establishment in their new abodes is to pulverise well with the spade the earth of the pits into which they are planted. The bottom earth of these pits should be well loosened and broken, to encourage a free and steady progress in the roots' development, and to enable them to strike deeper and to take that hold of the ground which is their best safeguard against the fury of the gales to which they may be exposed.

Independently, however, of these general causes which operate against the successful introduction and cultivation of the newer Pines and trees, there are other reasons which frequently in particular instances account for many cases of failure. But as they are rather to be found in the individual treatment of the species or plant itself, than in any deficiency in the hardiness natural to it, we do not feel warranted, in the present paper, in mentioning such causes in detail. We shall only briefly glance at them; they are practices which we have no doubt time will remedy, as they consist principally in the modes of propagation. For example, many of the finer Conifers grow readily from grafts, layers, or cuttings. Picea nobilis, Pinus ponderosa, Cedrus Deodara, Cupressus Lawsoniana, Wellingtonia gigantea, and many others are reared and increased by these means. Plants formed in this way, however, are never so fine as specimens, nor so robust in habit, as those grown from seed. Another way in which sickly and unsatisfactory plants are also procured, and which in like manner leads to disappointing results in after years, and aids in bringing discredit upon the genera, is by raising many of the varieties from home grown cones. We have heard gardeners and foresters boast that these new Pines were in some instances "fruiting freely" with them; and we know examples of the Abies Douglasii, and others, annually producing cones in this country. At Fingask (Perthshire), for example, the Cupressus Lawsoniana, growing in garden loam, and about 7 feet high at that time, bore cones in 1862. At Durris (Kincardineshire), the Abies Douglasii was planted from seed in 1840, and is now above 50 feet high, and produces annually "loads of cones." These, however, have germinated few plants. Again, in the same Pinetum, Picea nobilis, also planted in 1840, now about 36 feet high, has borne five crops of cones, from which in all about 8,000 plants have been raised.* At Madresfield Court, in Worcestershire, Cupressus Goveniana, about 17 feet high, was, in 1863, covered with clusters of its quaint-looking cones; but from two large seed-pans sown with their produce, only one plant was raised. Now, although these seeds may sprout and grow well enough in the border or pot to which they are committed, they are the progeny of a tree bearing fruit in an abnormal condition; for in their native habitats, these Pines take many years to arrive at such maturity as to produce healthy and abundant crops of cones; and they cannot be expected, under equally healthy circumstances in this country, to produce cones at an earlier age, nor is it prudent to sow the seeds of such precocious parents. The cost of importing fresh seeds, the produce of hardy full-grown trees, will be more than compensated by the vigour of the young plants, and their after condition will probably be such as to free the species from the stigma of being thought unsuited to the climate of Britain.

One word as to the soils which seem best adapted, and have since their introduction been found most suitable, for the healthy development of these beautiful plants. Most of those in our list have thriven best upon an ordinary average loam, of sufficient depth to form a bed for their branching rootlets, with a dry subsoil. The Abies do not require so deep a soil as the Larix, Pinus, Cupressus, Taxodium, or Picea. In too rich soil, they are apt to acquire the habit we have mentioned as so pernicious to their welfare, of making annually too rapid growths of young wood. In a poor soil, if well drained, their habits are sturdier, and although their progress may not be so rapid, it is nevertheless more satisfactory; and when the value of the timber comes to be tested, it will be found that the more slowly the tree has been allowed to develop its timber, and the less it has been induced by overcrowding in too rich soils to attain too early maturity, the harder and more valuable will be the quality of its wood. This must hold good of every variety.

Several species, such as Abies Morinda, Abies Menziesii, Cupressus Lawsoniana, and Wellingtonia gigantea, prefer a rather damp soil, upon a wettish subsoil; and all of these varieties, we have observed, have thriven best in such situations. Upon the chalky and limestone formations, if near the surface, none of them will thrive; and where coal crops out near their roots, they linger out a miserable stunted existence. The Abies maritima and Pinus Lambertiana have been noticed to grow most vigorously in a sandy free soil, while such a position does not suit most of the varieties we have named.

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* Since these remarks were sent to the press, we have learned that this splendid specimen was blown down in a gale. It had, however, we understand, been happily photographed, and the plate presented to the Scottish Arboricultural Society in Edinburgh.

List of recently introduced Coniferæ, which may be regarded as generally suitable to the climate of Great Britain and Ireland, ascertained from returns from various soils, altitudes, and exposures, furnished by practical and trustworthy growers of the species named.

Name of Species.	Remarks.
Wellingtonia gigantea	Universally vigorous.
Thujopsis borealis	Very hardy.
,, dolobrata	Not in general cultivation.
Thuja gigantea	Very universally hardy.
,, Lobbii	Not so generally grown.
Cupressus Lawsoniana	The hardiest of the Cupressus family.
,, Lambertiana	Sometimes tarnished by winds.
,, Goveniana	Generally stands well.
Cedrus Deodara	Requires care when young.
,, ,, robusta	Better habit and leader than above-named variety.
,, Libani	More adapted for England than for Scotland; thrives well in Ireland.
,, atlantica	Hardy.
Abies Douglasii	Worthy of extended cultivation.
,, orientalis	Ditto.
,, Menziesii	Sometimes rather deficient in Scotland.
,, obovata	Not generally grown.
,, Mertensiana	Hardy.
Picea nobilis	Hardy in most situations.
,, cephalonica	Sometimes suffers from spring frost.
,, Pinsapo	Sometimes browned in spring.
,, bracteata	Sometimes suffers from spring frost.
,, Nordmanniana	Hardy in most places.
,, Balsamea	Ditto.
,, canadensis	Ditto.
,, Fraseri	Ditto.
,, grandis	Ditto.
,, Pichta	Ditto.
,, Pindrow	Ditto.
,, religiosa	Sometimes injured by spring frosts.
,, rubra	Hardy.
,, Webbiana	Ditto.
Pinus Laricio	Worthy of general cultivation, and where rabbits abound.
,, excelsa	Sometimes doubtful.
,, Lambertiana	Peculiar as to soil and district.
,, monticola	Hardy.
,, ponderosa	Ditto.
,, insignis	Sometimes suffers from frost.
,, maritima or Pinaster	Valuable for coast planting.
,, taurica	Hardy.
,, Cembra	Very hardy.
,, uncinata or Mugho	Hardy.
,, rigida	Ditto.
,, pyrenaica	Very hardy.
,, austriaca	Ditto.
,, Sabiniana	Usually hardy.
,, Taeda	Ditto.
Taxodium sempervirens	Browned by spring winds in some situations, but thriving in many places.

—*Proceedings of the Scottish Arboricultural Society.*

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Single Kerria.—The double or common form of the Kerria is not so beautiful as the single one which we saw in Mr. Ellacombe's garden, at Bitton, the other day. It does not last so long in flower as the double form.

Ornamental Trees at Barton Hall.—In addition to those given last week (p. 432), I may add that a tree of Magnolia acuminata at Barton is 40 feet in height, and has a stem 4½ feet in circumference; and that there are also there fine examples of the Black Walnut and Tulip-tree, the latter having a trunk 6 feet in circumference.—W. Allan.

Ilex latifolia.—In 1852 I planted a small plant of this about 12 inches high, and it has had no protection ever since. The hardest frost we have had since that time was 37°, which browned the points of the shoots; but these I cut off when the plant broke well, and it has made a handsome tree, which most people mistake for a Magnolia, so fine is its foliage.—J. S.

Chamærops Fortunei.—May I inquire whether this has often flowered in England? I have a plant of it about 10 feet high, which shows three large flower-spathes—one is fully protruded, and the flowers are now bursting through their envelope. Are the seeds likely to ripen?—W. F., *Isle of Man.* [Chamærops Fortunei often flowers in the open air about London; but we suspect it will only ripen seeds under glass.]

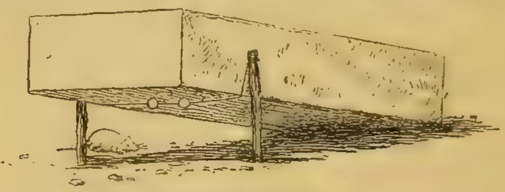
Exochorda grandiflora.—You have recently recommended this beautiful May-flowering shrub as a plant for walls, and a capital subject it is for that purpose. With me, however, it forms handsome bushes in peat soil in the London district; and, as it flowers later in this way than on walls, I get a more prolonged bloom than if I grew it in one way only. There are few uncommon shrubs more worthy of a place in a choice collection of early-blooming shrubs than this.—V. E. R.

Bamboos.—In an article in The Garden, of May 31, on "Forest Vegetation in Siam," it is said:—"We have seen hardy Bamboos producing an almost equally good effect in the southern parts of England and Ireland." I wish to inquire what species of Bamboos (other than Arundinaria falcata) were employed, and to what dimensions they have attained. I have found great difficulty in procuring any species of the tall-growing Bamboos, except the one I mention, which with me has attained a height of 14 feet.—W. F., *Isle of Man.* [You will find a descriptive list of hardy Bamboos, containing all the information you require, in Volume II. of The Garden, p. 316.]

GARDEN DESTROYERS.

CROCUS ENEMIES.

The Crocus is subject to many attacks from enemies, owing to its being in the ground in winter and commencing growth early. One may make proper preparation for it, and plant the bulbs in good season to little purpose if we have not previously trapped or otherwise exterminated the long-tailed, white-bellied outdoor mouse. I will not call it the field mouse, as this active little depredator is to be found everywhere outdoors—in the garden, field, plantation, and hedge—wherever, in fact, shell seeds, nuts, acorns, or Beech mast are to be found; indeed, any kind of seed, such as those of the Laurel, Bay, Cherry, Thorn, Holly, and the like, they will collect and hoard in large quantities, and as soon as Pea and Bean sowing has begun, and they have commenced to grow, they will attack and dig them out. They are, however, easily trapped with Peas first soaked and grown from a quarter to half an inch, and then threaded, two being allotted to each trap, left an inch apart on the thread, so as to afford room for the mice to put their mouths to and bite asunder the thread. This is cut in lengths of 10 inches, a knot being tied at each end and pulled into two slit sticks, which are run into the ground to hold up the Peas. Currant shoots or Raspberry canes, cut into one-foot lengths, may be used for this purpose, placed conveniently for the mouse to get at and nibble the thread asunder. On this rests one end of a brick, the other being on the ground, and when the thread is gnawed in two the brick falls on the mouse and kills it. Hundreds of such traps may be set in the course of a day. They are the most simple, inexpensive, and surest mouse-catchers ever yet invented. If these mice are allowed to ramble about, they are pretty sure to attack Crocuses the very first night after they are planted; and not only that, but they will continue to feast on them, old and young, as long as they are in the ground, whether in bloom or not. They only eat the bulbs, and leave the grass or foliage. But if the big bull-headed grass mouse should make his appearance after the Crocuses have thrown up their young grass above ground he will graze on that at the early growing season, and so will the sparrow. The chaffinch is also very fond of picking off the newly-made shoots. When Crocuses are plentiful near plantations and shrubberies, the wood-pigeon is very destructive to the young grass or foliage in the months of February and March. Rooks, too, are fond of Crocus bulbs at any time of the year when they can find them to dig out. But of all birds pheasants are the greatest enemies to Crocuses, often routing up whole beds of them, in any and every stage of growth, generally during the dusk of the morning and evening, before sunrise and after sunset. The squirrel and the rat, also, eat the bulbs when ripe; and, after they are stored away, if not guarded securely, house mice will carry off and hide away the whole of the bulbs that are worth anything. It is truly astonishing how quickly they will remove a large quantity. While the Crocus is growing in early spring, in mild moist weather, the shoots underground are subject to the attacks of the little lean tough black slug that travels up and down the earthworm drains; and as soon as the grass of the Crocus makes its appearance above ground, if white and grey slugs and snails abound, they will also feast on the young foliage; those, however, who know something of natural history and the habits of such intruders, soon learn how to guard against all and every kind of depredator, and are but seldom caught napping. Besides the host of intruders just named, the wireworm and various other ground grubs will also attack Crocus bulbs in various stages of their growth. The accompanying is an illustration of the trap mentioned above.



Garden Mouse-trap.

It consists in thrusting two sticks into the ground, fastening to each a thread with Peas on it, and then suspending a brick over them. The mouse in getting at the Peas nibbles the thread asunder, and thus effects his own destruction. A slate should be laid on the ground for the brick to fall on, and the bait need not be higher than about 2½ inches from the ground.

James Barnes.

THE GARDEN GUIDE.

SUFFOLK.

LIVERMERE PARK.

The park here contains about 500 acres, between 300 and 400 head of deer, and is remarkably well wooded. The house is surrounded by shrubberies and a pretty flower garden. There is also a nice range of glass houses, consisting of two or three Vineries, one of them containing a very fine Fig tree of great age and size, and sure fertility, two good crops being obtained from it every year. The centre of the range is occupied by a fine conservatory—light, elegant, and lofty. Livermere house used to be famous for its Magnolias (M. grandiflora) and Wistaria sinensis, but the winter of 1859-60 cut them nearly to the ground; they are, however, rapidly recovering. On the lawn are a few nice Cedars of Lebanon. The kitchen garden, which is pretty extensive and surrounded by shrubberies and pleasure grounds, is about half a mile distant from the house, from which it is hidden. The chief features of Livermere are its extensive park, already alluded to, and a noble lake, near the garden front of the house.—Miss Broke, a minor; resident trustees, Captain and Mrs. Horton; gardeners, Mr. Munday, flower garden, Mr. Lockhart, kitchen garden. Five miles north-east from Bury St. Edmunds.

AMPTON PARK.

This joins Livermere, the lake just alluded to forming the boundary between them. The two parks comprise over 700 acres, and from Ampton fine views are obtained of the larger park of Livermere. The pleasure grounds round the house at Ampton are interesting and extensive. On the lawn are some noble Cedars, shrubberies stretch away in different directions, and the flower garden is well furnished and tastefully laid out. Near the house are some old-fashioned conservatories, and the chief glass houses are, however, in the kitchen garden, between which and the mansion is a public road. In this department are some fine Pear and other fruit trees, the walls being remarkably well furnished. Good Grapes are also produced in the Vineries. Recently some orchard and plant houses have been erected, and there are useful pits, &c., for the growth of plants for furnishing the conservatory, cutting, and bedding out.—Hunter Rodwell, Esq.; gardener, Mr. Snelling. Distance from Bury St. Edmunds, 4½ miles north.

STOWLANGTOFT HALL.

This has recently been rebuilt, and new gardens made; but the gardens around the site of the old hall and the old kitchen gardens have been retained. These lie almost at the bottom of a valley, where the ground is rich and crops plentiful and good. The fruit and plant houses, which are numerous, are also here; and a very pretty gardener's cottage, placed near to the frame and forcing ground, looks out on a pretty flower garden. The new hall, which is built upon a much higher site than the old one, is a noble building. Attached to it is a handsome conservatory, lofty and elegant, and well furnished with fine plants. In front of the house is a geometrical flower garden, bounded by a terrace walk and a retaining wall; then follow the park and the old gardens in the distance.—Col. Wilson; gardener, Mr. Galletley. Two and a half miles from Ixworth, six and a half north-east of Bury St. Edmunds.

ROUGHAM HALL.

This handsome mansion, in the Tudor style, has a striking appearance viewed from the public road. It overlooks the Rougham Downs, and is associated with pretty pleasure grounds, a small flower garden, a fine span-roofed conservatory, and woods filled with Rhododendrons, which, in the peat soil, here literally grow like weeds, and sow themselves in all directions. At this season of the year the Rougham Rhododendrons are the "lions" of the neighbourhood; not only the woods but even the open heath being literally aglow with them. The greater part of them are of the ponticum breed and its commoner hybrids. Generally speaking, Rhododendrons are neither plentiful nor fine in East Anglia. They don't like the chalk below and the dry biting air above. The trees, especially the Oaks at Rougham, show by their stunted appearance that they have long ago bottomed and exhausted their shallow root runs. The Rougham road runs between the hall and the kitchen garden, which is of considerable extent, nicely walled round, well furnished with fruit trees, especially Pears, and contains several good Vineries. The soil here is of a more loamy and very different character from the hungry peat in which the Rhododendrons delight.—Captain Bennet; gardener, Mr. Pollard. Distance from Bury St. Edmunds, 4 miles.

DRINKSTONE PARK.

The gardens and pleasure grounds here have been much extended and improved of late years. The soil, a strong clay, is admirably suited for Roses, and the finest blooms of Cloth of Gold, perhaps ever seen, used to be gathered from a plant which grew and flourished for years on the front of the mansion; a severe winter, however, cut it down, and it has never thoroughly recovered. Maréchal Niel, which did almost equally well, shared the same fate—a fate, by the way, to which this glorious Rose is peculiarly liable. For a season or two it makes shoots like those of a Willow; the frost nips them, and then the plant does little more good. Most of the best Tea Roses do well outside at Drinkstone, and the outside walls of most of the hothouses are clothed with them. The walls are both studded and wired, so that Roses are trained thereon without injury. Roses, Perpetuals and others, are also extensively grown in a pretty Rosery near the flower garden, as well as more perfectly for exhibition in the kitchen garden, well mulched with manure. Fine-foliaged and stove and greenhouse plants are also well grown in some good modern span-roofed houses at Drinkstone, where there is also a new range of Vineries and a Fernery. The walls of the Fernery are lined with virgin cork, and the house altogether is tastefully laid out and furnished. The Vineries were planted last year with eyes on Thomson's plan, and they made fine rods, that soon reached the top of the house. There are also here a good Peach case, well furnished; various pits and frames, and a pretty gardeners' cottage, smothered with Roses. Many new belts of shrubs and trees have been recently formed, in some of which the rarer kinds of Conifers, in some cases, have overtopped the nurses. Wellingtonias, Piceas, Pinuses, &c., have also been grouped and dotted about the park in choice positions, and are rapidly growing into beauty. The park contains nearly 250 acres, and is richly wooded. The view from the house is rich and varied, embracing a fine lake, crowded with white water Lilies, and margined here and there with groups of Pampas Grass.—Captain Powell; gardener, Mr. Nicholls. One mile from Woolpit, two and a half miles from the Elmswell Station of the Great Eastern Railway; eight miles, east by south, from Bury St. Edmunds.

SONG OF THE FLOWERS.

See, we come dancing in sunshine and showers,
Like fairies or butterflies bright young flowers;
O'er vale and o'er mountain, tho' ever so steep,
Go wander—we'll still on your rambles peep.
Far from the city and smoke live we,
With our neighbour, the rugged old forest-tree,
Who, wrapp'd in his mantle of Ivy green,
Looks gay,—for his wrinkles are never seen.
With the zephyrs we dance
'Neath the bright warm sun;
But the moon's pale glance
Bids our sport be done.—
Then we close our petals, nor, winking, peep
Till the morning breaks our perfumed sleep.

Blooming in sunshine, and glowing in showers,
Dancing in breezes—we gay young flowers!
How often doth an emblem but silently tell
What language could never speak half so well!
E'en sister flow'rs envy the favoured lot
Of that blue-eyed darling—"Forget-me-not."
Her name has now grown a charmèd word,
By whose echo the holiest thoughts are stirr'd.
Come forth in the spring,
And our wild haunts seek,
When the wood-birds sing,
And the blue skies break!
Come forth to the hill—the wood—the vale—
Where we merrily dance in the sportive gale.

Oh! come to the river's rim, come to us there!
For the white Water Lily is wondrous fair,
With her large broad leaves on the stream afloat,
(Each one a capacious fairy-boat),
The swan among flowers! how stately ride
Her snow-white leaves on the rippling tide;
And the dragon-fly gallantly stays to sip
A kiss of dew from her goblet's lip;
Oh! come in the glow
Of the long summer's day,
When the cool waves flow,
And the zephyrs play;
Oh! dwell not in the cities, 'mid cark and care,
But come to the river's rim, come to us there! —*Anon.*

THE GARDEN IN THE HOUSE.

BASKETS OF ROSES.

Roses in a cut state are always welcome, and a tastefully arranged basket of them constitutes one of the most elegant floral ornaments that can be obtained for the decoration of the drawing-room. Three important points may be urged in their favour. Firstly, Roses will keep fresh for a comparatively long time; secondly, they are not difficult to arrange; thirdly, they can be bought for a small sum, if not growing in one's own garden, and any one who does possess a garden, large or small, is sure to have Roses. Baskets made of different materials for holding ordinary cut flowers can be bought, but for Roses I prefer those made of glass, as the clear crystal shows up the rich colours of the Roses and their variously tinted foliage better than any other material. In glass baskets the flowers should nestle among Moss instead of sand, which, when seen through the glass, has a bad effect.

The arrangement as to colours must be, of course, according to taste; some prefer their Roses to be all of one colour, such as crimson; others like white or pink, and some mixed colours. In the accompanying illustration, Maréchal Niel has been used in the form of full-blown and half-opened buds, set off with foliage of the same and the young brown foliage of other Roses. Round the handle is twisted a spray of Lygodium scandens, but a piece of variegated Ivy, Japan Honeysuckle, or any thing of that kind, would look quite as effectively. Opinions differ, I know, as to the propriety of mixing Ferns with Roses in preference to their own foliage, but for my own part I prefer their own leaves, when the arrangement consists wholly of Roses. If of mixed flowers, then light Ferns might be used with advantage. I need scarcely add that besides Roses there are many other flowers that might be arranged in baskets for the drawing-room, and with excellent effect; but I have used Roses to illustrate my subject on this occasion, owing to the high estimation in which they are held, and their suitability for the purpose now under consideration.

A. H.

Basket of Maréchal Niel Rose.

FLOWERS FOR CEMETERIES.

As in all English-speaking lands the cemetery is to some extent a garden, and often, as in America, a noble and well-kept garden, a few words on some plants suitable for it may not be without value. If plants that look well all the year round are more *àpropos* for any one spot than another, that is in the cemetery; but, notwithstanding this, the gaudy flowers of the "bedding out" garden are frequently planted on graves; while far from suitable in tone, they perish in winter, and frequently present a miserably ragged, aspect after being cut down by the autumnal frosts and rains. Infinitely better are flowers of spring, whether they disappear in winter or no; and, better still, those which look well all the year round, irrespective of their flowers. There are plenty of plants eminently suited for this very purpose, cheap, hardy, and easily obtained; and some of them of such vivid green, even in the middle of winter, that they could not fail to contrast most favourably with their sculptured surroundings; and what more suitable for the grave than humble plants which perish not during our cold and dreary winters, but which glisten into a deeper green in the November blasts, and emerge from the hardest frosts and deepest snows full of life, and ready to smile into flower under the earliest glances of spring.

The kind of plants that I would particularly recommend are those known as alpines—hardy evergreen herbs of northern and elevated regions in temperate climes. First among them, from its excellent constitution and the readiness with which it may be procured, I would place the evergreen Iberis saxatilis, which forms neat little evergreen bushes, looks fresh at all seasons, and becomes a perfect sheet of snowy beauty in early spring. It grows everywhere, and will be found to do better on and around graves than in the shady and half-shady positions in which it is usually planted. This common kind is easily obtained, and is as useful as any; there are several others equally useful, I. corifolia and I. correæfolia, which blooms later than the others, bearing large and fine pure white flowers. Suppose it is wished to make a dwarf evergreen edging round a grave or its railings, there is nothing which will equal the first or commonest of these plants; once planted evenly in line it will soon form a compactly spreading hedge, and remain in good condition for years without any attention whatever. Should it at any time get too large or spreading for its position, it may be clipped in closely with a small shears; and it bears clipping as well as a Privet hedge. Along with it might be associated the dwarf, creeping, compact, and evergreen Aubrietias, which become masses of purplish blue in spring. Being much dwarfer plants than the Iberis, these would require a slightly different position. The Iberis, for instance, might be in the centre, and these, with the dwarfer subjects, towards the edge. All the Aubrietias are suitable; they only differ a little in colour. The white Arabis albida would also be very useful in this way. The dwarf yellow alpine Wallflower, Cheiranthus alpinus, forms a very neat and compact bush all through the winter, and produces masses of clear, pure yellow in spring; but it is not a very permanent plant in heavy soils, and we should, in this instance, choose the most permanent. A most exquisite plant for the head or foot of a grave is Anthericum Liliastrum (St. Bruno's Lily). It grows from 1 to 1½ foot high, and bears large, pure white, Lily-like flowers. For forming a carpet of snowy flowers Campanula carpatica alba ranks next to Arabis albida in profusion of bloom, and is perhaps superior to it in compactness of growth. Other effective white-flowered plants are Vinca minor alba, which blooms from spring all through the summer, Thlaspi latifolium, Viola cornuta alba, Potentilla alba, Phlox subulata alba, Anemone alba, Arenaria montana, Campanula cæspitosa alba, Hutchinsia alpina, Scilla nutans alba, and Smilacina bifolia and stellata.

Silene alpestris combines every good quality which could be desired in a plant of this kind; it is as hardy as the common Daisy, forms a low-spreading evergreen tuft, and becomes a mass of the purest and prettiest snow-white flowers in early summer. It will form a charming companion for the Aubrietia, and is easily raised from seed, or may be had easily as ready grown little plants in any nursery where alpine plants are grown. In the very interesting Sedum tribe a good many dwarf things will be found suitable; the English Sedum album, for instance; the large glaucous S. sempervivoides, the green Sedums reflexum and sexangulare. Indeed, nearly every hardy Sedum will be found suitable, and is pretty certain to look well at all seasons. Of course these dwarf plants require to be kept clear of weeds, and free from the company of larger and more straggling plants, which choke and disfigure them. The Sempervivums, or Houseleeks, also afford a few exceedingly permanent and pretty plants, which generally look better and more compact in winter than in summer. Some are green and others glaucous—all interesting and neat. S. californicum, glaucous, with each leaf tipped with chocolate colour; S. montanum, dwarf, neat and green; S. globiferum, forming round little balls of leaves, green with a pinkish tinge, and scarcely rising above the ground, will be found among the best, though every one of the hardy ones will be found suitable.

The Saxifragas are still better than the preceding kinds, in consequence of their deep and vivid green. The mossy Saxifrages are particularly remarkable for assuming their deepest and finest verdure when winter commences its reign, and almost every other plant begins to look ragged and decaying, or has lost its leaves. These, then, in nearly every instance offer attractive objects for planting on and near graves. It is useless to specify individual kinds, for nearly all are equally good, and differ mainly in their tone of green, and slightly in size, one or two scarcely growing more than an inch and others attaining the dignity of three, four, or five, and even a foot high, when old. The native S. hypnoides and its varieties are as good as any; while, if the silvery kinds are fancied, and very beautiful they are, looking as well or better at Christmas than at midsummer, Aizoon, pectinata, crustata, pyramidalis, Hostii, intacta, and others closely related to them will be found to suit admirably. Those who do not know these encrusted Saxifragas may be the more favourably disposed to them when it is stated that their tiny leaves are margined with a row of silvery or white dots, and the leaves being very abundantly and compactly produced, the plants present a singularly neat appearance. A turf of these here and there among the emerald green kinds would look very beautiful. Even the Killarney Saxifrage (the London Pride) and its allies would do, but scarcely so well as the mossy and silvery sections, which generally produce white flowers in spring or early summer. All the preparation necessary for these plants is a slight lightening of the surface soil with sand where heavy, and that is rarely necessary in ordinary soils.

Among these pretty alpines, &c., I would drop here and there a bulb or plant of some chaste and pretty spring flower, like the common or Crimean Snowdrop, Hepatica alba, the white and delicately-striped Crocuses, Bulbocodium vernum, Scilla bifolia alba, Leucojum æstivum, vernum, and pulchellum, Erythronium Dens-canis album, and any other spring flower that may be admired and obtainable. A few Violets would be very suitable if the soil were one in which they would flourish, which is not the case on heavy clays. Finally, a few neat dwarf and hardy shrubs—compact tiny evergreens—are excellent. In this way nothing surpasses Erica carnea, which is a perfect mass of charming flowers in spring, and hardy and free in almost all soils. Some of the dwarf and curious varieties of the common Ling, which are to be had in good shrub nurseries, are also good; while the pretty little Partridge berry (Gaultheria procumbens), with its bright red berries in winter and tiny close growth, cannot fail to charm. In a peat soil a good variety of dwarf Ericaceous plants might be tried. On nearly all soils the Bearberry (Arbutus Uva Ursi) will trail its recumbent evergreen growth healthfully along; and, where there is considerable space, some of the dwarf hardy evergreen Rhododendrons, the bright-berried Skimmias, and dwarf green tapering Conifers, like the Retinosporas, may be tried with great advantage, with a few of the Ivies to train up rails, along chains, &c.; not to speak of other dwarf, evergreen, and interesting shrubs which may be found by examining any good shrub nursery.

From the limited space generally around graves, the planting of large or free-growing things is not to be recommended. The general planting with the larger trees of suitable character should be attended to by the managers of the cemetery. There are a great many Conifers and other trees and shrubs which look very well in a young state, but which soon attain large and unsuitable dimensions; and these should be discarded as unfit for the surface and immediate surroundings of a grave. It is not sufficient to see the aspect of the plant when young; we should inquire also as to its usual ultimate development. I.

THE FLOWERING OF PLANTS.

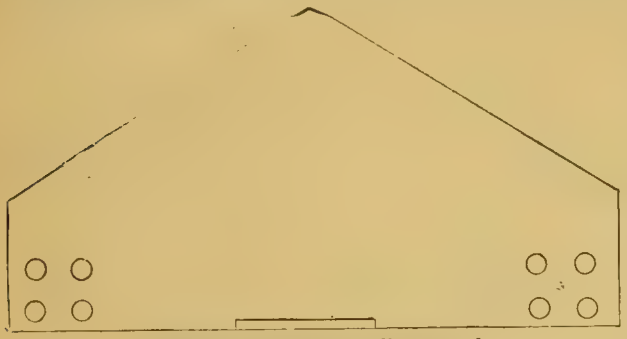
Every addition to the organs of nutrition, besides adding to the bulk of a plant, increases its power of obtaining food. Apart from accidents, therefore, there would seem to be no limit to the growth and increase of plants but the failure of an adequate supply of nutriment. The reproductive organs, however, on the other hand, stop any further growth in the part of the axis which they terminate; and making large demands on the resources and accumulated nourishment of a plant, supply little or nothing in return. Reproduction is, therefore, an essentially exhaustive process, and does not commence till the plant is provided with a store of accumulated food sufficient to sustain it. It is these stores of food which we especially appropriate in utilising vegetable produce. In the Turnip, for example, the first year of growth is occupied chiefly in accumulating nutritious matter in the enlarged root. The aërial part of the plant is simply a tuft of leaves attached to an axis, with undeveloped internodes. In the following year the growth is all diverted from the root to the ascending axis, which grows rapidly, drawing its supplies from the root, which wastes, becomes hollow, and contains finally little except insoluble fibre. So complete is usually, in the case of biennials, the drain of nutritive matter in the flowering and subsequent maturation of the seed, the plant has neither strength nor material remaining to enable it to put out fresh organs of nutrition, and it consequently dies. The period of flowering varies greatly in different plants. It depends partly on constitutional habit; and this may depend on external conditions. The perennial plants of warm countries may become annuals in colder ones, as is the case with the Castor-oil plant and the Marvel of Peru with us. It may also depend on the amount of accumulation of food which flowering requires in each case. An annual blooms a few weeks after its germination, and the nourishment it possesses being completely exhausted, it is destroyed by the process. Yet its existence may sometimes be prolonged over more than one season, if the flower-buds be regularly removed, as in the Tree Mignonette of gardeners. The flowers of woody plants which bear large and fleshy fruits are not produced from terminal, but from lateral buds, which rest upon the "seasoned" wood of the previous year, in which nutritive matter is accumulated. Fruit trees also exhibit the effects of exhaustion when, after an extensive crop, especially of the late kinds of fruit, the trees fail more or less the succeeding year, though they will bear more abundantly in the year following their rest. The period of accumulation in some plants is very long, and the subsequent exhaustion correspondingly fatal. The American Aloe, which flowers in its native climate when only five or six years old, only does so with us after the lapse of a period longer in proportion to the retarding influence, and sometimes as much as from fifty to seventy years. The Talipot Palm, which lives to a great age, and bears leaves 30 feet in diameter, flowers only once, and then perishes. The rate of growth of the inflorescence is usually much more rapid than that of other organs. The flower-stem of the American Aloe, even in our conservatories, grows at the rate of a foot a day, and the plant's store of food is proportionately rapidly used up. The accumulation of nutriment usually takes place in some part of the axis. In the Turnip, Beet, Radish, Carrot, and many other cultivated plants, it is contained in the enlarged root, and the tendency to enlarge seems to be one which may be pretty readily induced, and afterwards increased by cultivation. In other cases the stem becomes loaded with amylaceous or saccharine matter, as with the Sago Palm and Sugar Cane; or the succulence of the whole plant may become sufficient to supply the inflorescence, as with the American Aloe, the sweet juice of which is made by the Mexicans into an intoxicating drink. The store, wherever situated, will obviously attain its maximum just before or at the time of the first appearance of the flower-buds. It rapidly diminishes as they open. The stalks of the Sugar Cane are cut just before the flowers expand, and the Sago Palm is fit for cutting down at the first appearance of the flower-spike. The chemical changes which accompany flowering are apparently similar to those which accompany germination. The circumstances of the two processes are indeed in many points identical. In both there is rapid vegetable growth, drawing its supplies from previously accumulated stores. These usually at first contain some form of starch, which in each case first passes into the soluble form, and afterwards into dextrine and sugar. The latter stages, which take place probably more immediately in the neighbourhood of the flower, are accompanied by the absorption of oxygen, the formation of carbonic dioxide, and the evolution of heat. In ordinary plant growth, the food of the plant is highly oxidised, and its assimilation is consequently attended with the evolution of oxygen. In germination and flowering the food supply of the developing parts contains comparatively little oxygen, and its assimilation is at any rate accompanied by the separation of part of its carbon as carbonic dioxide, while oxygen is absorbed. An experiment devised by Persoz illustrates the oxidation which exists during flowering. If the roots of a translucent plant, like Balsam, are watered with a solution of logwood, the colouring matter is reduced when absorbed into the roots, and loses its colour. When, however, it reaches the petals it is again oxidised, and its colour again appears. The fragrant odour of the Meadow-sweet, which is attributed to the presence of salicyl hydride, is stated by Buchner to be furnished by the oxidation during the expansion of the flower-buds of the salicine which they at first contain. This conversion is artificially imitated when salicine is oxydized by means of potassium dichromate, and salicyl hydride is formed. The evolution of heat in blossoming was first observed by Lamarck in 1777, in the spadix of Arum italicum, where an immense number of blossoms are crowded together. It was afterwards shown by Saussure that the heat evolved was in direct proportion to the oxygen absorbed. According to Vrolik and De Vriese, the temperature has a regular periodicity, and attains its maximum in the afternoon, between two and five.—*How Crops Grow.*

THE FRUIT GARDEN.

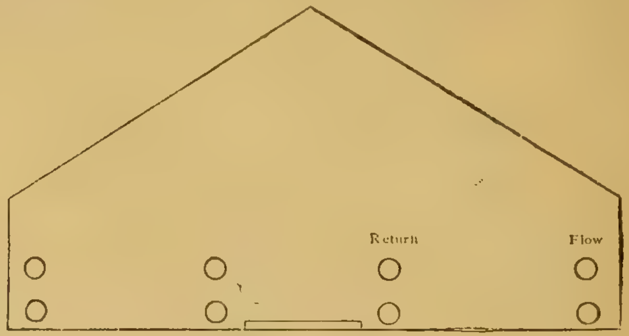
ARRANGEMENT OF FRUIT HOUSES.

The general plan and arrangement of fruit houses depends in every case so much upon situation and circumstances, that it is scarcely possible to offer any suggestions that would be generally applicable on that head. There are, however, certain rules and other matters connected with the effective working arrangements of an establishment which should not only be duly considered, but adhered to as far as possible.

The best site for a block or range of houses is a level one. A gentle inclination to the south is not objectionable; but when the ground slopes either to the east or west it should be made level if practicable, otherwise the structures must necessarily occupy different levels, which is very inconvenient, as the houses, if in a line, shade one another; flights of steps at the various landings obstruct the workmen in their duties; the heating apparatus works unequally; and externally the general effect is impaired. Whatever kind of site may be chosen, it should have a free and open exposure to the south, east, and west. The protection afforded by trees or rising grounds against prevailing winds should be taken advantage of, but these objects should not encroach so closely upon the houses as to obstruct, in any degree, the light and sunshine. This applies more particularly to span-roofed houses, which, as their shape denotes, are intended to utilise the heat and light of the sun to the utmost. Consequently, when they are placed with their ends abutting, it may be, against a high wall or in the shade of trees, as they often are, the advantage of the span-roof is to a great extent lost; indeed, it is quite possible in such a case that it may be less serviceable than an ordinary lean-to house. The span-roof, considering the greater extent of active radiating surface which it presents, is not an economical form, unless it is placed where it can have sunshine for as long a period as possible every day. Gardeners are familiar with the injurious effects of shade upon plants requiring much light, and especially upon the inmates of glass houses. The far-reaching shadow of tall trees upon a Wheat field may be traced by the later ripening of the grain for nearly a hundred yards out, and as distinctly as the sun-shade upon a dial; what, therefore, must be the effect upon a house of Vines or Peaches, for instance, which loses the sun's rays shortly after midday, and what the extra consumption of fuel? Some prefer keeping plant and fruit houses apart, but this is not a necessary arrangement. Besides, plant structures may be introduced with good architectural effect to divide the different blocks, and break that sameness of appearance which fruit houses generally assume. Internally they also pleasingly diversify the interest, and may be placed so as to afford a ready and agreeable introduction to the range, and at the same time prevent currents and draughts of cold air from reaching the warmer forcing houses. Such arrangements lessen the necessity, too, for growing stove and greenhouse plants in the fruit houses—a practice which may be recommended on the score of appearances, but on no other grounds, if freedom from insect plagues, which almost defy remedial measures when once they are established, be any consideration. In order to facilitate all work connected with the formation and keeping of inside fruit-tree borders, and the transfer of large quantities of soil and materials, it is necessary that the paths and doorways in all the houses should be wide and roomy, whatever may be the size of the houses. This will also insure convenient walking room; for there need be no impediments to fruit houses at all times forming part of an agreeable promenade to the proprietor and his friends.

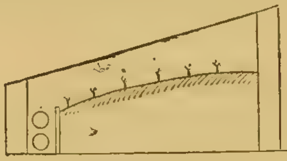


Section of house with pipes badly arranged.

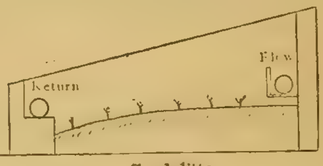


Good arrangement of pipes.

Ample heating power should in all cases be provided. Frequent attention to fires, waste of fuel, and scorching pipes, parching up everything in their neighbourhood to an injurious extent, will be avoided by a little extra outlay for boiler power and piping at the beginning. This and the stoking are matters of quite as much importance as the kind of boiler that should be employed. The plan of carrying all the hot-water pipes round the front of the house on the block principle is bad, for in that case the heat is very unevenly distributed; neither is it a good plan to have them sunk below the floor level between retaining walls—in an open drain, as it were—for the heat is absorbed by the cold walls. This is especially the case in pits where the pipes are often confined one above another in a narrow space between the bed and the cold outer wall. Under such circumstances, during a cold night, plants are roasted at the front of the pit, while the back has probably to be covered with mats to exclude frost. In such a case the better way would be to carry the flow pipe round the back of the pit, and return along the front, or *vice versa.* In wide houses the piping should be distributed over the floor—say two rows in front, two in the middle, and two at the back of the house. By this arrangement we secure not only a more even temperature throughout the house, but we save heat; for, if all the pipes were taken round the front of the house (I am speaking of lean-to houses), the direction of the hot-air current would be directly towards the cold glass roof, which would, by conduction, at once lower its temperature greatly, and the current, following the roof to its apex, would be spent without materially affecting the temperature of the house. On the other hand, the warm current from the row of pipes along the middle of the house must heat a much greater volume of air in its passage to the roof, having to traverse more space; and so on, within certain limits, according to the distance of the pipes from the glass. This is exemplified any time in a lean-to Vinery or Peach house during a frosty night. The condensed vapour upon the glass never freezes above the front row of pipes; the position of the middle row is just discernible upon the frosted glass; while the back row produces



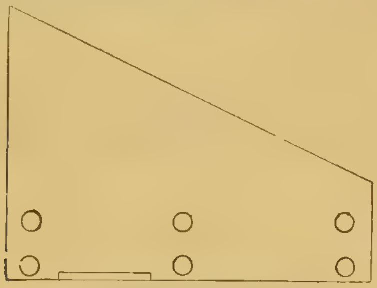
Bad pipe arrangement.



Good ditto.

no visible effect, its heat power being diffused in its ascent. The arrangement of the heating apparatus should therefore be studied according to the form of the house, in order to utilise to the utmost every inch of heating surface.

An equally important matter is the supply of water to fruit houses. Of the many duties which have to be entrusted to subordinates, watering is one of the most important. It requires not only skill and experience, but an amount of painstaking attention which can hardly be expected from those who have only a temporary interest in the work, unless facilities exist which reduce the strain upon both brain and sinew to a minimum. During pressure of work a man may be tempted, even in the best regulated establishments, to neglect or only half do his work, if things are not handy, who would probably avail himself of conveniences did they exist. When a man has to carry hot and cold water from different sources, perhaps a hundred yards apart, before he can water a house of Pines or a Vine border, as the case may be, depend upon it he will make as little as possible serve his purpose. The water supply should, therefore, be both ample and convenient. All rain water should be collected. In nine cases out of ten no provision is made for saving more than a fractional quantity of this valuable supply, which in ordinary seasons would go far to meet all demands; the best plan, wherever the supply comes from, is to provide large tanks in each house or block of houses. Under the paths is a convenient place for these, and they should be covered over. They may be built of brick, and lined either with cement or concrete. A nine-inch brick wall, lined with one coat of cement, makes as cheap and lasting a tank as can be desired. The large tanks will provide water at a suitable temperature for what are termed cold houses, such as late Peach and orchard houses, and for this reason they should be accessible by dip-holes in every house; but for the warmer houses, such as Pine stoves, early Vineries, and Melon houses, &c., additional cast iron tanks, large enough to hold a hundred gallons or more each, should be provided, and these should be placed conveniently above or alongside the hot-water pipes. Attached to each should be a handy pump communicating with the main tank under the floor, for the purpose of filling them once or twice a day, and providing a plentiful and convenient supply of water at the same temperature as that of the house. Where there are long ranges of Vineries with inside borders, or extensive Pineries and plant houses, such arrangements will be found to be by far the most economical and serviceable in the end.



Good arrangement of pipes.

The next matter is the supply of soil and shed accommodation, upon which a word or two should be said. The shed room should always be in proportion to the amount of glass, and the potting and soil sheds should be near or behind the warmest houses. In some places they are heated, which is a very good plan, in order that the house and soil may be kept at a proper temperature for potting any thing that may be brought out of a warm house. The potting sheds should communicate, by means of inner doors, with the houses, that there may be no carrying of tender plants to and fro in the open air when work has to be done. As to the supply of soil, it is unreasonable to expect success if this is begrudged. Good soil should always be in store in some convenient out-of-the-way place, stacked in ridges; and the cribs in the potting sheds should always be full, that materials in a fit and proper condition for use may always be there when wanted.

S. W.

FRUIT WITHOUT FLOWERS.

At a meeting of the Academy of Natural Sciences, Philadelphia, February 11th, Dr. Ruschenberger, the president, in the chair, Mr. Thomas Meehan presented an Apple, which was borne by a tree at Kittaning, in Pennsylvania, and which tree never produced any flowers in the popular acceptation of the term; but always yielded an abundance of fruit. This specimen furnished a practical illustration of some morphological truth which could not often be demonstrated in the way this afforded the opportunity of doing. It was admitted that a fruit was a branch with its accessory leaves transformed. The Apple fruit was made up of a series of whorls of leaves comprising five each. Cutting an Apple through we found a series of five formed the carpels containing the seeds. Several series of whorls, very much retarded in development, probably formed the stamens, but this could not be so well seen in the Apple fruit, as they seemed to be almost absorbed in the corolla series. This was the next in order that appeared in the divided Apple—the green curved fibrous line which we find in all Apples midway between the "core" and the "rind" is the dividing line between the series which forms the corolla and the outer series which forms the calyx. In this tree there are no pistils, the series which usually goes to make up this part of the fruit structure being either very rudimentary or entirely wanting. Hence there was no core to the fruit. The result of this want of development was that the usual calyx basin of the Apple was in this case occupied by a cavity three-quarters of an inch across. There were no petals; but in place five gland or rather bud-scalelike processes, at regular distances, on the edge of the green fibrous outline before referred to. The outer whorl, which usually forms the calyx, was almost asepalous, as a mere scarious membrane marked the place where the calyx segments or sepals should have appeared. It was so easy in this specimen to trace the dividing line between the outer or calycine whorl and the inner or corolline whorl, which, uniting and becoming succulent, formed the popular Apple fruit, that it was worthy of note in this connection. But the most interesting feature in this specimen was what were probably, from their similarity in appearance, cork cells, formed abundantly on the outside of the Apple. It would seem that, with the lack of development in the inner series of whorls necessary to the perfect fruit, those which remained were liable to take on somewhat the character of bark structure.

Pears and the Frost.—I find that the May frosts have played sad havoc with the Pear crop. Almost the whole of the outside fruits on pyramidal trees are bitten on their upper sides, and of course ruined. No simple protection of boughs has been of much use against May frosts driven into the tender fruit by the east wind. That wind seems as freely freighted with ice as if it were January; it (the wind) stays in the east with a persistency that is really heartbreaking to cultivators. While I write (June 2nd) it is there, straight as a needle to the pole. I doubt even if this bitter wind will not thin the Apple fruits. Latterly it has blistered some Peaches and Nectarines as if fire had passed over them. I observe, too, that Pelargoniums and Calceolarias, well hardened off, and perforce put out, are struck all down their eastern sides, as if fire had burnt or frost frozen them.—D. T. F.

The Blood-leaved Peach.—The *Gardener's Monthly* illustrates and describes this new ornamental foliaged Peach, the leaves of which, early in the year, are said to be of a deep blood-red colour, but to gradually fade as the weather becomes warmer, when they assume a dull green appearance. Its fruit is medium sized and slightly oblong, somewhat flattened; skin white, with a pale red wart, and a few pale red spots or stripes; flesh white, juicy, well flavoured; clingstone; ripens beginning to middle of August. It may be classed as good in flavour, but deficient in size. About Philadelphia it ripens in the end of September, and when making a second growth in August, the leaves are nearly as brilliant as in spring.

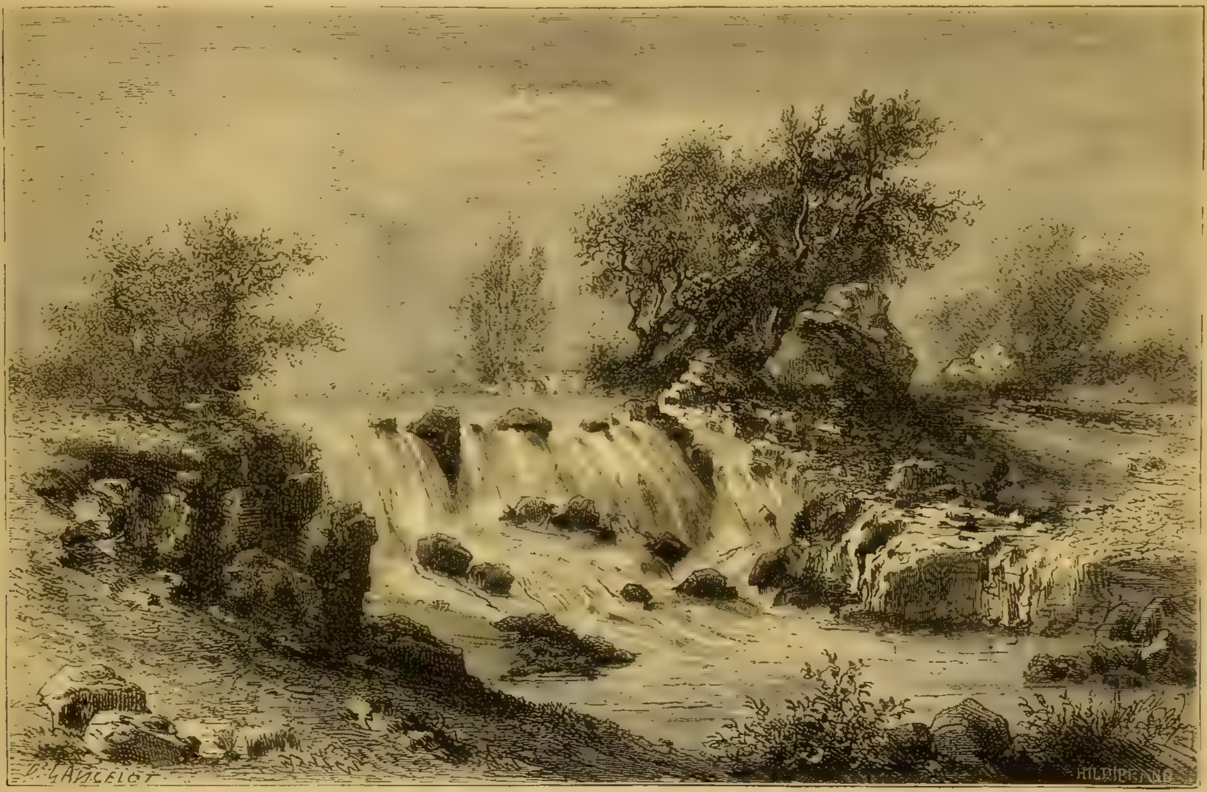
NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Early Forced Grapes.—A market gardener and early fruit grower in West Middlesex told me, on the 25th of May, that he had been cutting Muscat of Alexandria Grapes for a month previously, and that they fetched 24s. per lb. in the market. This fact will, I imagine, startle some of our gardeners, who, although they have great private resources to support them, are still beaten, in the matter of early Muscats, by our growers for market.—A. D.

Standard Orchard Pears.—In a recent number of the *Bulletin d'Arboriculture*, the following are recommended as the "best winter Pears to be grown as tall standards," and therefore suitable for orchards:—Bergamotte Espéren, Bergamotte Hertrich, Beurré Luizet, Beurré Milet, Comte de Flandre, de Curé, Doyenné d' Alençon, Doyenné Sieulle, Josephine de Malines, Marie Guisse, and Passe Colmar.

THE CASCADE AT VIRGINIA WATER.

The falling of water, whether in the roar of a mighty cataract, or the gently rippling murmur of a group of trickling falls, is so invariably pleasing, that travellers deviate miles from their route to catch but a glimpse of the beautiful phenomenon; and artists linger for weeks in the neighbourhood of a celebrated fall in order to study earnestly the ever-changing features of its aspect—the rising mist that often veils the lower portion in exquisite indistinctness, the fitful hues of the iris that in a passing gleam of sunshine appear and vanish in a moment; and the foam, churned into compact masses that are carried down the impetuous stream till they dissolve and blend again with the water.



View of the Cascade at Virginia Water.

These, and such as these, are the objects sought out for study by the painter. But the horticultural artist, in every new model which he becomes acquainted with, seeks to ascertain how far the features which he perceives, whether natural or artificial, can be utilised in works of his own. There are few illustrated works on gardening without several representations of cascades of various character—from the formal tumbling of the waters at St. Cloud and Versailles, to that style of more natural-looking cascades which are found in nature, and occasionally in well-designed gardens. Our illustration shows the waterfall at Virginia Water, and is a noteworthy example of good work in this way. It is a good representation of a very clever work of horticultural art. The manner in which a portion of the water is diverted from the main stream to trickle over the rocks below the fall in streaks of glistening silver is a very successful and effective device. It was, perhaps, suggested by the celebrated cascatelle of Tivoli; but it is none the worse for that, as it would doubtless be very difficult indeed to discover a more exquisite model of the kind. H. N. H.

The young Planes planted on the Thames Embankment are now out in fresh and beautiful leaf, and are evidently thriving vigorously.

THE INDOOR GARDEN.

PHALÆNOPSIS GRANDIFLORA.

There are but few Orchids that rival the Phalænopsids in floral beauty. There is a regal stateliness in their habit of growth that proclaims them to be members of the aristocracy of the vegetable world. There is the gracefully-curved flower-stem and the precious weight of pearly blossoms borne at its apex. Those are flowers fit to weave in the tresses of an empress on her bridal morn! The lustrous rubies and emeralds of her tiara could not vie with the chaste purity of those sculptured petals; priceless diamonds with borrowed lustre cannot eclipse the modest splendour of those snowy blossoms! Naturally Phalænopsids are epiphytes growing in Borneo, Java, Sumatra, and on the continent of India. In cultivation they require a warm humid temperature and moisture at the roots all the year round, though less is essential during the dull winter months. Phalænopsids, if large, may be grown in pots, in crocks, in charcoal, and living sphagnum; small plants do well on blocks with a little sphagnum moss, or they may be grown in baskets in the above compost suspended near the glass and carefully shaded from bright sunshine. Nearly all the species are most profuse bloomers; indeed it is often necessary to cut the flower-spikes off small plants, or they would thoroughly succumb to this over-flowering propensity. Phalænopsis grandiflora and P. Schilleriana have been imported in large quantities recently, and plants may now be purchased for shillings where guineas were formerly demanded. No collection, however small, should now be without them. Both stand in the foremost rank in the genus to which they belong. The roots of P. Schilleriana are very distinct from those of the other species of this genus, being flat, and having a rough appearance. The leaves are beautifully marked with bands of white, and the blooms individually are very large and handsome.

F. W. B.

THE PANSY AS A POT PLANT.

There is scarcely a flower show of any note at which prizes are not offered for collections of cut blooms of Pansies, and some schedules have classes for Pansies in pots; and there is reason to believe the cultivation of the Pansy in pots is gradually extending, not only for show purposes, but also because the profusion of richly-coloured flowers produced during the early spring months when grown in this way are so attractive. Some hints as to the best mode of growth in pots, therefore, cannot fail to be acceptable at the present time. The best plants for blooming in pots in early spring are those struck from cuttings in June and July. These will strike readily under a hand-glass, in a bed of light sandy soil, occupying a northern aspect, where the glare of the summer sun does not come, and where there is no drip from falling rain. As soon as these are sufficiently rooted, they should be placed in well-prepared beds, in a shady place in the open ground, and from these should be drawn the plants required for cultivation in pots. Early in October these should be put into large 60-pots, placed in a cold frame till established, and then placed in the open air as long as the weather is mild and open; a compost made up of well-decomposed turfy loam, rotten manure, some leaf-mould, and coarse sand, the latter in proportion to the close or free nature of the loam, as the case may be. About the last week in January, or by the first week in February, there should be a shift into the blooming pots of the size known as 32's. One of the most successful Pansy cultivators of the day, Mr. Charles Turner, of Slough, recommends, "when potting, to loosen the outside of the old ball, remove a portion of the top soil, and drain the pots, as you would for Carnations," with a layer of crocks about an inch in depth. "After covering the bottom of the pot with crocks, place some of the coarsest soil, mixed with a little manure, over the drainage, and shake all down by striking the pot on the bench. The soil should not be pressed hard with the hand; no water should be given for a day or two after potting." A common two or three light wooden frame is the best place in which to keep the plants during the winter; but it should be shallow rather than deep, so that the plants may be not too far from the glass. Air should be given freely on all occasions when the weather is mild; in severe frosty weather the plants should have the protection of some mats. The plants selected for pot culture should have a bushy branching growth, and consist of four or six leading shoots if a good head of bloom be required. To impart all possible strength to these, the side-shoots springing up from the base of the plant should be removed, and inserted as cuttings. There is, therefore, the double advantage of strengthening the main shoots by their removal, and the production of a supply of young plants to take the place of the old ones when worn out. The exhibitor of Pansies in pots should always have a supply of plants, so as to ensure a good succession of bloom.

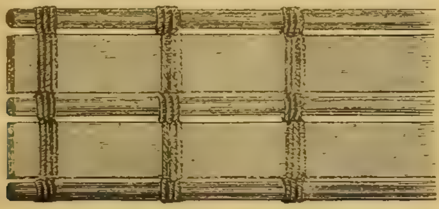
As the shoots make growth they should be tied to stakes, and, in the case of plants wanted for late blooming, the main shoots can be pinched back, so as to ensure plenty of side growth. These will not bear such fine flowers as the plants carrying only three or four main shoots; but a larger quantity of bloom will result, and they will prove charming decorative objects. Plenty of air must be given, to keep the plants from becoming drawn. The cultivator should aim at a short, sturdy, healthy growth, and as the flowers open they should be screened from the sun. Strong-growing varieties, bearing large flowers, should always be selected for cultivation in pots. Some liquid manure should be given as the flowers expand, but the plants should be so raised that it can drain away freely. Plants so treated will produce finer blooms than those obtained from plants growing in the open ground, and they are not so liable to the many accidents that beset flowers grown where little protection can be afforded them. A cultivator, by growing a few plants in pots, can have fine heads of bloom under cover early in the season, and the cuttings made from the side shoots taken at this stage will furnish him with plenty of young, vigorous plants to bloom in beds in the open air in autumn, where, in the cool, moist, declining days, well-developed flowers can be had. It is during the temperate days of spring and the cool days of autumn that the finest Pansy blooms are produced; hot weather is against them at all times, for the lacing or belting to the flowers never comes so perfect, nor is characterised by such fine hues when grown in bright, dry, summer weather. The grower need scarcely be reminded that during the time the plants are making their growth they must be kept free from greenfly, and an occasional fumigation with tobacco smoke will secure this. Some of the best flowers of later years have come to us from Scotland. The climatic conditions of that country are more favourable to the culture of the Pansy than the drier atmosphere of the southern parts of England. Messrs. Dickson and Co., and Messrs. Downie, Laird, and Laing, of Edinburgh, Messrs. White and Sinclair, of Paisley, and others, are constantly producing new varieties, which are divided into three sections: Selfs, yellow ground, and white ground flowers. Of yellow selfs, Cherub, Mrs. Horsburgh, and Ophirie; of white selfs, Great Eastern, Miss Ramsey, and Peerless; of dark selfs, Eclat, George Keith, L. T. Fleming, Luna, and Miss Muir are the best. Of yellow-ground flowers there are Comus, Ebor, George Ford, George Wilson, George Muirhead, John Currie, O. C. Champion, Robert Burns, Tom White, and William Young, all of fine quality, and more or less distinct in character; and of white grounds, Alice Downie, Cupid, Jane Wilson, Lady Lucy Dundas, Miss Addison, Miss Adamson, Mabel, Princess of Wales, Village Maid, and Waverley—all very beautiful, and showing many hues of colour. Quo.

PLANT GROWING FOR MARKET.

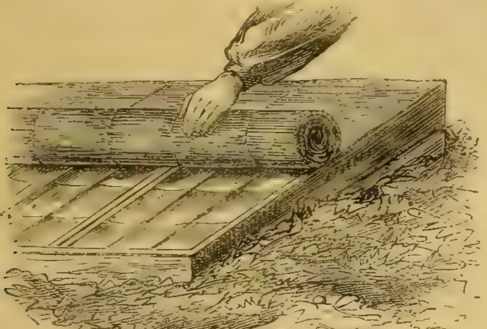
Everyone who has seen the fresh, sturdy, little plants brought by the market growers round London to the Metropolitan markets will readily acknowledge that there is much skill shown in their cultivation. Market growers have not, however, always convenience for doing things well; on the contrary, they often labour under especial disadvantages. As regards second and third class material, our markets are somewhat overstocked, but really early, well grown plants may always be disposed of at high prices. While I write I am within a stone's throw of several little places where an astounding quantity of market plants is grown. On entering one of these establishments the other day, I was struck with the great heaps of fresh, sweet, fibrous loam, leaf-mould, and cow-dung that confronted me. The best growers are very particular as to their compost heaps, and go to great expense in procuring the best loam they can find. In growing for market, good soil, light span-roofed houses, and brick or turf pits, together with an abundant supply of water, are the great essentials, to which must be added energy and forethought. The plants principally grown for market purposes are Fuchsias, Pelargoniums, Heliotropes, Hydrangeas, Richardias, Stocks, Asters, Mignonette, Pinks, Cloves, Carnations, Lily of the Valley, Spiræa japonica, Roses, bulbs, and numerous plants and shrubs suitable for spring forcing. Plants for market should be dwarf, bushy, and profusely flowered, say from 6 to 18 inches high. Cyclamens are generally grown from seed sown in the autumn, or as soon as it is ripe, and the young plants are pushed on rapidly during the ensuing summer, and flower profusely the following spring. Many half-hardy annuals, as Rhodanthe, Nemophila, Balsams, Celosia, and ornamental Grasses are grown beautifully by some cultivators with hardly any appliances except turf pits. Fine-leaved plants, as Ficus elastica, Isolepis gracilis, Selaginella hortensis, and some of the hardier exotic and British Ferns are grown by the thousand, and are readily sold at remunerative prices. A subject of great importance in plant culture from a decorative point of view, viz., careful selection of varieties, is zealously attended to by market growers, and in selecting seed parents they always give preference to robust plants of dwarf, compact habit, good constitution, and free-flowering qualities. Primulas, Calceolarias, and Cinerarias are remarkably well grown by some cultivators in low span-roofed houses or pits, and the "strains" which some of these market people possess are superb, the flowers being large and of good colour and substance. Most of the growers select seed-bearing plants, and carefully hybridise them when necessary, in order to obtain a good strain, and some are so particular that on no account would they part with a single seed of their own saving; others, on the contrary, sell their strains to the seedsmen. When we consider that Primula seed fetches from £10 to £20 per oz., we need not wonder that five shilling packets should contain such microscopic quantities. Hydrangeas are just now coming into the market, and very fine some of them are, with great heads of flowers nearly a foot across. One cultivator at Acton grows these by the thousand, and does them better than anyone else with whom I am acquainted. Some of the individual blooms measure more than 2 inches across, and are most beautifully coloured by exposure near the glass. The same grower has one of the finest beds of Lord Lyons Pink I ever saw, from which thousands of bright crimson-purple flowers may be cut. A white flowered Pink of large size and good substance is Alba multiflora, the blooms of which are as white as snow, and measure nearly 3 inches across. Though somewhat delicate in constitution, it bears forcing well. The prices realised for different plants depend on their quality and earliness. Zonal Pelargoniums fetch from 9s. to 18s. per dozen; Hydrangeas, such as I have described, 24s. to 30s.; Fuchsias 12s. to 24s.; and other things in proportion; after which the retail dealers make, in many cases, a handsome profit. Some growers for market have a great variety of decorative plants, but most of them confine themselves to a few really good things, and grow these by the thousand. The work in one of these establishments appears to be one unceasing routine of propagating, potting, watering, tying, and packing off to market; and in a well regulated place it is rare to find a spare inch of room or a frame unoccupied, for as fast as the plants in flower are sold, succession plants are potted on to fill their places. B.

LATH BLINDS FOR SHADING.

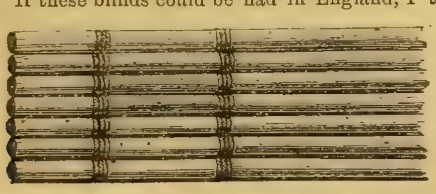
In paying a visit to the Belgian nurseries lately, I was much struck with the very convenient sun-shades employed to cover houses and frames in that country. We all know how soon blinds of linen and cotton become tender and worthless. The Belgians employ thin laths of wood laid side by side, with narrow intervals between them, in the way of Venetian blinds; cords laid across them, to which the laths are attached by tarred string, connect all together. These blinds, which look like the Roman fasces, can be made of any length and of any convenient width, and are rolled up with great ease. In one nursery I saw split bamboo used for this purpose, which no doubt is lighter, stronger, and still more durable than strips of ordinary wood. If these blinds could be had in England, I think there would be a demand for them. In Belgium, I imagine, they are made by the gardeners in winter; but I neglected to make the inquiry.



Shade of small Laths and slender Rods united by twine; full size.



Shade for frames.



Shade of very slender Rods of wood and twine; full size.

Chilwell. J. R. Pearson.

[Should any of our readers desire to know how the shades of which Mr. Pearson speaks are constructed, we shall be happy to show them some very neat models which we brought home some time since from the continent, and which are now open to inspection at The Garden office.—Ed.]

MARSHAL NIEL ROSE UNDER GLASS.

Beautiful, no doubt, are the golden blooms of that noble yellow Rose, Marshal Niel, even when seen displaying their beauties but sparsely and shyly, as is generally the case when grown in the open air. It is, however, when seen growing under glass, and dropping its golden pendants from the roof, not in threes, or in dozens, but in numbers which defy counting, that one realises its flowering capabilities and becomes impressed with the conviction that it is when grown well up to the light as a conservatory climber that the Marshal is in its right place, and in the field in which to win new Laurels. Of this we were more convinced as we lately gazed with admiration on the very remarkable specimen of this lovely Rose, which, when in the full display of its floral honours, is the pride of the Belfast Botanic Garden, and of the curator, Mr. Johnston. A few particulars with regard to the Belfast plant will, we trust, not be without interest, and may perhaps be of some practical value to our Rose loving and Rose growing readers. Some four to five years since, when the Rose was much scarcer and its fame less widely established than it now is, Mr. Johnston was given a by no means particularly vigorous or robust plant of the Marshal. Unwilling to expose it to the open air, he assigned it a modest corner next the front wall of one of the wings of the large conservatory. Here with sods he formed a raised bed for its reception, some two or three feet square, and about so much in depth, and into this he transferred the plant. The Marshal took kindly to his new quarters, and the first year favoured his patron with the modest number of just half a dozen blooms. When, the year before last, the garden was honoured with a visit by the Lord Lieutenant and Countess Spencer, the plant carried some six hundred flowers, and her excellency was presented with a splendid bouquet entirely composed of magnificent blooms culled from among them. Last year the number was largely increased, and this year, when we saw it, we were informed it had borne over 1,500 superb blooms! Inducing it to make plenty of wood, and then having it thoroughly ripened, are the elements of success as regards the Marshal, and on any one securing them he is sure to shed in profuse bounty his golden favours. What about pruning? we asked Mr. Johnston; "Except to cut the flowers, a knife never touches it," was the reply.—*Irish Farmers' Gazette.*

Aerides crassifolium.—A robust and well-grown specimen of this rare species has at last been flowered by Mr. Whitehead, gardener to F. B. Dodgeson, Esq., of Blackburn, Lancashire. It has been called "the best species in the genus," which is saying a great deal, considering we have the noble A. Fieldingi and the still more handsome and rare A. Schröderi. This new species is one of Messrs. Low's importations, and is easily distinguished, even when not in flower, by its broad, thick leaves, and dense habit. Its flowers call to mind those of A. (falcatum) Larpentæ, being similar in conformation, but they are produced on a much longer drooping spike. Their colour is also much deeper and more effective than that of the last-named species, being a soft, clear amethyst purple, shading off into white at the base of the segments. The peculiar tint belonging to this species is similar to that found in the petals of Phalænopsis Luddemanniana, but deeper and richer in tone. Mr. Dodgeson's plant has ten leaves, which vary from 5 to 9 inches in length, and are about 2 inches broad, the younger leaves being dotted with purple and slightly tinged with brown. It has borne twenty fine flowers on a spike, and this number will doubtless be exceeded as the plant developes itself. This Aërides, as has just been stated, is as yet very rare, but now that its charms are recognised by cultivators as being something superior to those of others, it will doubtless soon find its way into the most select collections.—F. W. B.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Cantua dependens.—At Belton House, near Grantham, one of the pillars supporting the roof of the lofty conservatory was a few weeks ago a perfect picture of floral beauty with the above plant, which was full of bloom from the base to a height of 20 feet at least. The flowers in colour can only be described as a scarlet crimson cerise, and, occurring in thousands, their beauty may be imagined by those who have only seen, as is usually the case, a few flowers on a sickly "red spidery" plant. Here of course it is planted in a border, and is hence greatly relieved from liability to attacks from insect life.—J. C. N.

Mahernia vestita.—This little plant is seldom seen, but I do not think that, for amateurs especially, a finer flowering one could be found. It is a native of the Cape of Good Hope, will thrive in any house in which the temperature is kept above the freezing point, and succeeds perfectly in a compost of good loam, mixed with a little peat or leaf-soil. It requires to be repotted annually, but overpotting is injurious to it, and must be avoided. It likes plenty of water whilst growing, but no stimulants; and it should be pruned in a little after it has done flowering. Thus treated it becomes covered in May or June with a profusion of little orange and red flaked flowers that are at once graceful and ornamental.—James Forbes, *Perth.*

INSECT AGENCY IN FLOWERS.

BY THOMAS MEEHAN.

I am of opinion that art has not so much to do with garden variations as is generally supposed; that variations in nature are as great as in horticulture; and that the florist's credit is chiefly due in preserving the form which unassisted nature has provided for him. It was at one time part of the essential idea of a species that it would reproduce itself. If any variation occurred in nature, it was taken for granted that seedlings from this variation would revert to the parent form. But it is now known that the most marked peculiarity in variation can be reproduced in the progeny, if care be taken to provide against fertilisation by another form. Thus, the blood-leaved variety of the English Beech will produce blood-leaved Beeches; and, as I have myself found by experiment, the very pendulous Peach produces from seed plants as fully weeping as its parent; and when the double-blossomed Peaches bear fruit, as they sometimes do, I have it on the authority of a careful friend that the progeny is double-blossomed as its parent was. But I need not refer particularly to this. Any intelligent florist of the present age can testify to the fact, that varieties will reproduce themselves as fully as the original forms from whence they sprung. I do not think botanists, as such, are so fully aware of these facts as florists are. They scarcely admit of much inherent variation in form in nature; but look rather to hybridisation, and insect agency in connection therewith, to account for such changes when they occur. In order to avoid the possibility of these agencies acting as the sole factors in evolution, I have generally taken a genus consisting of only one species in a given locality, to show how great is the variation in form, where no congenital species could mix with it. I have, for this, chosen Epigæa repens, Chrysanthemum leucanthemum, and the Quercus neo-mexicana (Q. Gunnissonii ?) of the Rocky Mountains. Another familiar plant to illustrate this is the common yellow toad Flax (Linaria vulgaris). In a handful of specimens gathered in an afternoon's walk, I have found some marked variations, differing from each other almost as much as species do. In regard to the spur, which is generally as long as the main portion of the corolla, some had them only one-third or one-fourth as long; and in one instance the plant bore flowers entirely spurless. Dr. Darrach informs me that he believes he has, in years past, gathered a spurless form, but has neglected to place it on record. Then some plants had flowers with spurs thick, and others with narrow ones; and while some had spurs quite straight, others curved so as to describe nearly the half of a circle.

Now this Linaria is an introduced weed, with nothing allied to it anywhere, in the localities where we usually find it, with which it can possibly hybridize. The variations must be from some natural law of evolution inherent in the plant itself. Varieties of course may cross-fertilise as well as species; and some of these variations may be owing to one form fertilising another form; but there can be no avoiding the fact, that at least the first pair of varying forms must have originated by simple evolution. Now, going back to our florists' experience, the question occurs, that as varieties once evolved will reproduce themselves from seed, why does not some one of these Linarias, which has been struck off into some distinct mould, reproduce itself from seed, and establish, in a state of nature, a new race, as it would do under the florist's care? Why, for instance, is there not a spurless race? It is scarcely probable that the solitary plant, found on this afternoon's walk, is the only one ever produced. Dr. Darrach's recollection shows it is not a solitary case. The humblebee furnishes the answer. They, so far as I have been able to see, are the only insects which visit these flowers. They seem very fond of them, and enter regularly at the mouth, and stretch down deep into the spur for the sweets gathered there. The pollen is collected on the thorax, and of course is carried to the next flower. The florist, to "fix" the form, carefully isolates the plant; but in the wild state a spurless form has no chance, the bee from the neighbouring flower of course fertilising it with the pollen from any of the other forms. If there were no bees, no agency whatever for cross fertilisation, nothing but the plant's own pollen to depend on, there would undoubtedly be races of this Linaria, which, again, by natural evolution at times changing, would produce other races; and in time the difference might be as great as to be even thought generic. But we see that by the agency of the humblebee the progress of the newly evolved form is checked. The pollen of the original form is again introduced to the offspring, and it is brought back at least half a degree to its starting point. Insects, in their fertilising agencies, are not always abettors, but rather at times conservators of advancing evolution.

A lady having the misfortune to have her husband hang himself on an Apple tree, the wife of a neighbour immediately came to beg a branch of that tree, to have it grafted into one in her orchard. "For who knows," said she, "but it may bear the same kind of fruit."

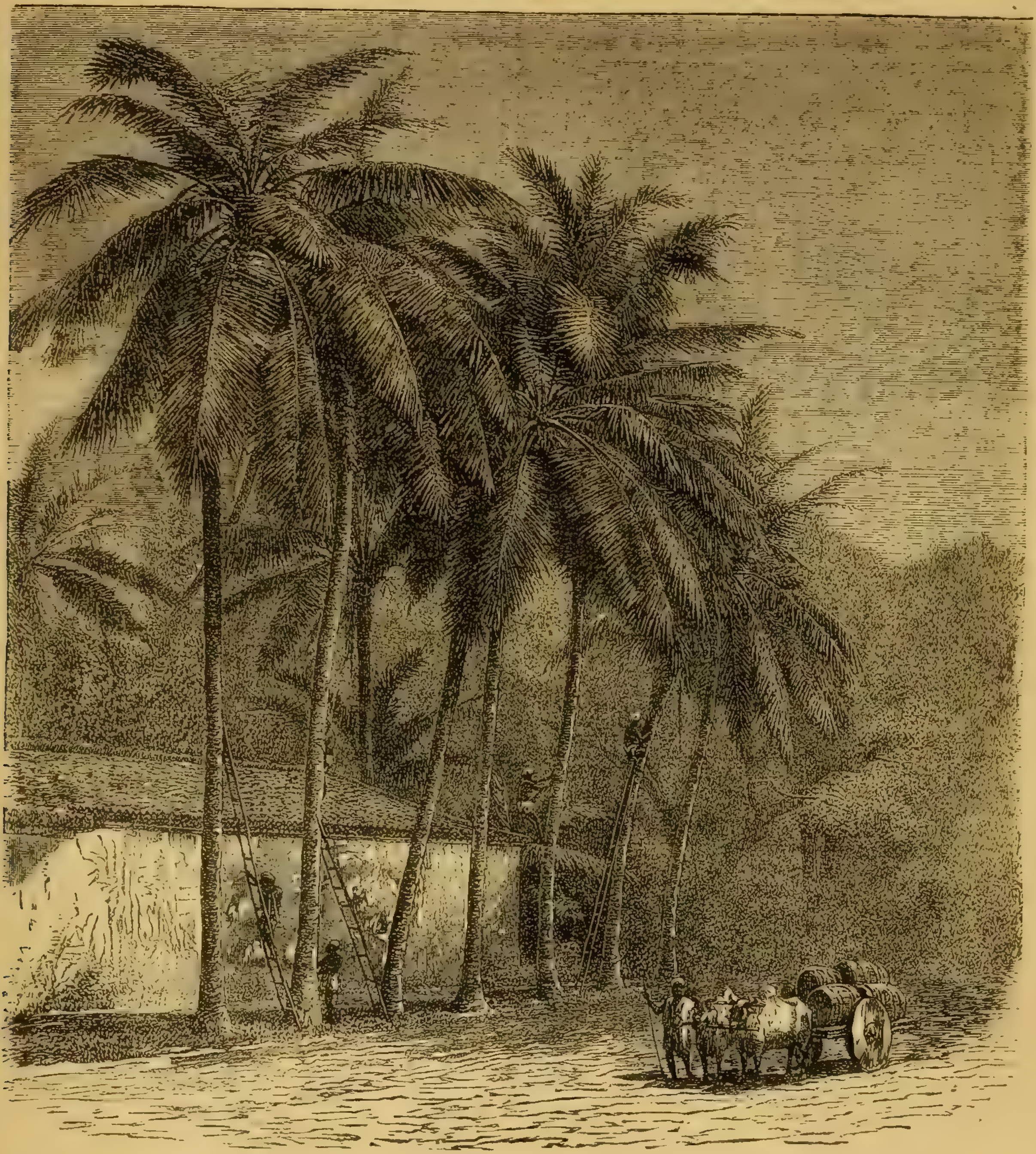
THE COCOA-NUT PALM.

(COCOS NUCIFERA.)

This is now so extensively cultivated throughout the tropics that it is impossible to ascertain its native country; there can be no doubt, however, that it is indigenous to some part of Asia, probably Southern India. It exists in vast quantities on the Malabar and Coromandel coasts, and the adjacent islands, growing in the greatest luxuriance upon sandy or rocky sea-shores. It is also common in Africa, South America, and the West Indies. The Cocoa-nut Palm has a cylindrical trunk, sometimes as much as 2 feet in diameter, and rising to the height of 60 or 100 feet, surmounted by a crown of gracefully curved feathery or pinnate leaves, each of which is from 18 to 20 feet in length, and composed of a strong tough central footstalk, with numerous narrow, long, and sharp-pointed leaflets arranged along both sides of it, giving the entire leaf the appearance of a gigantic feather.

The uses of the Cocoa-nut Palm to the dark children of the tropics are manifold, forming, as it does, both food and shelter, as well as fibre, that is employed for a vast number of purposes. In no country with which I am acquainted have I seen it so extensively cultivated as it is in Ceylon, and none but those who have travelled the glorious Government road from Point de Galle to Colombo, one of the loveliest of drives, seventy-two miles in length, and varied only at long distances by a few gentle undulations, can have any idea of the beauty of a Cocoa-nut plantation. This drive passes through a belt of Cocoa-nut forest, varying in depth from one to six miles, until it approaches Colombo, where you have Cinnamon plantations on the one hand, and the Cocoa-nut Palm on the other, dipping so near to the sea as to be often washed by the surf, as the waves swell and break along the shore. Cocoa-nut cultivation is chiefly confined to the native population, and is, with the addition of a patch of "Paddy Rice land," a few Gourds, and other tropical vegetables, such as Chillies, Cucumbers, Yams, the roots of the Caladium esculentum, the fruit of the Jack tree (Artocarpus integrifolia), the Bread Fruit tree (Artocarpus incisa), and a few other wild productions of the land, the whole source of existence of the poorer classes in Ceylon. Sometimes wealthy Ceylonese own large plantations of Cocoa-nuts two or three hundred acres in extent, but more generally they are confined to small patches, which are distributed among the villagers; and such is the importance attached to this "King of Palms" that one often hears of a lawsuit having taken place, to recover the tenth share of a Cocoa-nut tree! There are also large plantations owned by European merchants and planters. In making a Cocoa-nut plantation, it is necessary, in the first instance, to form a well-stockaded nursery, in order to prevent the incursions of porcupines, and other animals, that love to prey on the succulent shoots of the young plants as they first make their appearance above-ground, and to protect them till the first fronds have matured a sufficiency of fibre to resist the onslaughts of their enemies. They are then moved to open plantations prepared for them by cutting down jungle timber and brushwood, the worthless portions of which are burnt on the land, holes being cut for the reception of the Cocoa-nut plants from 15 to 20 feet apart, about 4 feet square, and 2 feet in depth. After being planted, young Cocoa-nuts require seven years before they come into bearing; and, unless they have been placed in good soil, or have received some extra cultivation, they do not produce very heavy crops during the first few years of fruiting. As soon as the young Cocoa-nut trees are strong enough, cattle are allowed to graze freely amongst them; and, being penned up at night on different portions of the plantation, as on our own system of winter and spring sheep-feeding, the crops are thereby materially increased. Each Cocoa-nut Palm produces annually from twelve to twenty-five nuts; and each nut being incased in a heavy conical husk, the trees have a heavy load to carry, as each nut weighs from 4 lbs. to 5 lbs. Rarely does a year pass in Ceylon that some half-dozen deaths are not reported from ripe Cocoa-nuts falling on the heads of some of the villagers.

The modes by which Cocoa-nuts are gathered are various; sometimes, as shown in the accompanying illustration, ladders are placed against the trees to a certain height, to facilitate the climbing, after which a rope is looped both round the stem of the tree and the body of the climber, who, setting the soles of his feet against the stem, and holding on by his hands, his body forming a curve supported by the looped rope, ascends the tree very much as a monkey does his pole; in fact, such is the agility of some native nut-gatherers, that I have seen them ascend without ropes or other assistance. In extensive plantations, the trees are fastened together by means of stout ropes, over which the harvesters pass from tree to tree without descending, thereby saving both time and labour. As soon as the nuts are harvested, they are divested of their outer coverings, which are stacked for future use. The nuts are then conveyed either to the native oil mills, which are worked by oxen, or to the more powerful steam mills belonging to Europeans, where they are broken up and divested of their shells, the kernels being thrown into heaps to ferment, previous to being put into the mill and ground up, after which the oil is expressed by hydraulic pressure. The refuse of the nut, after the oil has been expressed, is formed into oil cake, which in Ceylon bears the name of Poonac. The bullock carts used for the transport of Coffee and Cocoa-nut oil are thatched with Cocoa-nut leaves, which make them impervious to the heaviest of tropical showers. Cocoa-nut leaves are also used for thatching the roofs of the native huts and for shading verandahs. As nearly as I can remember, Ceylon exported about 20,000 tons of oil annually, all the time I was there, and about 5,000 tons of fibre and yarn, known as Coir. Coir-mat making affords employment to the low-



Group of Cocoa-nut Palms.

country Cingalese, who manufacture them of various patterns and forms.

But not only is the Cocoa-nut valuable on account of its commercial productions. To the natives, as I have already mentioned, it forms a principal ingredient of their daily diet. No curry would be perfect without some finely scraped Cocoa-nut—no salad palatable unless dashed with some of the milk of the ripe nut; and one of the greatest of luxuries is the delicious milk of the Cocoa-nut when about three-parts ripe. Only those who have travelled hot tropical roads, through countries where water is so bad that the very look of it is repulsive, can form any idea of the value of a drink from a cool Cocoa-nut. Peter Wallace.

THE FLOWER GARDEN.

THE CRIMSON DESERT PEA.

(CLIANTHUS PUNICEUS.)

If this beautiful wall plant were better known it would require no commendation from me to induce its wider cultivation. It is perfectly hardy, except probably in very cold and late situations. Even in unfavourable climates it may be preserved by a mat or other such slight protection; and in favourable circumstances it is a magnificent object. I have only seen, in the many gardens I have visited this year, two specimens in the open air. The first is in Mr. M'Donall's nursery at Stranraer, in which a south wall was aglow with the bright clusters of flowers to the height of 9 feet, and the width of perhaps 12 feet; I was informed that it had been in constant flower since February. The other specimen was on an east wall in Mr. Fitzherbert's garden at Blackcastle, near Navan, and, though not so large a plant, still it was very healthy and flowering profusely. Young plants should be obtained now in pots and planted out at once. They should be kept regularly supplied with water in summer, and as dry as possible in winter, and when thoroughly established will respond freely to generous doses of manure-water.

Salmoniceps.

BLUE-FLOWERED BORDER PLANTS.

I intend to say a few words on Gentiana acaulis—not to eulogise it, which is unnecessary—but to point out how it appears to suffer when placed close to two very beautiful plants which I have in my little garden. The first of these is the blue flowered Dracocephalum grandiflorum, a tolerable large mass of which seems even more beautiful than the Gentian itself; but perhaps that may arise from the comparative rarity of the Dracocephalum. Why is this fine Dracocephalum so seldom seen? It is of the easiest possible culture. To flower it well, it should be pulled to pieces now and then, and the strongest pieces planted from six to twelve in a clump; it likes a rather stiff soil. The next plant that appears to rival or eclipse the Gentian is the truly beautiful Lithospermum prostratum. Nothing can surpass in brilliancy a large mass of this when seen under the full blaze of the mid-day sun, on a gravelly bank or rock-work. Like the Gentian, it seems to do best when starved. The best way to flower the Gentian, as a border plant, is to place about a hatful of stones in a small mound, and plant bits of Gentian over them. These little mounds show the plant off to advantage, and it prefers stones to soil. The one fault of the Gentian is that it is rather fastidious in opening its blooms, which are always shut during dull or cloudy weather. I know a fine moated hall in Lancashire which was famous for its Gentian. A gravelly bank on either side of the coach road, for perhaps 60 yards, right up to a bridge over the moat, was one mass of Gentian, and parties came long distances to see it. Mr. Fish is hardly correct in calling the Gentian azure; it is, I should say, intense ultramarine. I have a variety of it with each of the segments of the corolla tipped with white. This I have not seen elsewhere; but I have somewhere seen a pure white variety of Gentian. Thos. Williams.

PRIMULA CORTUSOIDES AMŒNA.

Notwithstanding all that has been said in favour of Primula japonica, I am inclined to think that the beautiful P. cortusoides amœna is in reality the queen of Primroses. By the way, according to professor Morren, it is no longer Primula cortusoides, but Primula Sieboldi. I think, however, that lovers of this flower will elect to stand by the old name. This beautiful Primrose has now been in cultivation for some time past; but it is not half so much appreciated as it deserves to be, for the simple reason that it is not widely known. P. japonica has turned out a somewhat disappointing introduction; and never once, since it has been cultivated, has it realised the character depicted in the coloured illustration of it with which lovers of flowers are familiar. On the other hand, P. cortusoides amœna has more than realised what was predicted concerning it; and just in proportion as P. japonica declines in popular estimation will its congener as surely rise in favour. It is a very hardy Primrose, and one of the brightest bits of colouring I have seen this season was a clump of this Primrose growing in the open air on the herbaceous border at Chiswick. This plant had been out all the winter, and, notwithstanding the incessant rainfall, no injury had befallen it in consequence. The beautiful bright roseate hue of the flowers struck the eye when looking at them, even from the most remote points of view. This Primrose should have a good position, fully open, and a little high, if possible, and it should be planted in some good rich soil. It is a fine subject for a sheltered rock garden; but in any case, when it gets well established, it blooms with freedom. It makes a fine pot-plant also, and, when thoroughly established in 32 or large 48-sized pots, it produces several trusses of beautiful flowers. About August the plants should be divided, but not too freely, and potted in a soil made up of good loam, some sand, and plenty of leaf-mould; and then the plants should be put into a cold frame or cool house, and be kept close and shaded till established. They will simply need protection from rough weather. The strongest will flower in April, or earlier, and during May. R. D.

Bitton Long Ago.—I am the old gardener of Bitton, and I have just been gratified by your report of what you saw there at Easter. All the trees there, excepting the two Yews, and those only 20 years old, were planted by my own hands. I don't think there can be a more favourable soil, deep loam on a bed of gravel. My son has added greatly to the collection. It was about 1830 when I had full 3,000 different plants, all in open borders—all the Pæonies and Sedums, over 100 Asters, and as many Irises, 30 Yuccas, Chrysanthemums, Narcissus over 100, all the Crocuses, 30 water plants, and a Rosarium. There were, moreover, Ferns, and that at a time when a London nurseryman laughed at me for inquiring for such plants in London. I had all the Irises which I could get, being then in correspondence with the Paris Garden and the Berlin Garden. This is a wretched soil, and most discouraging, and I am too old for working as I did at Bitton, and my old gardening friends and nurserymen who knew me are all dead. My old catalogues—which my son has—will prove what was grown at Bitton. I never cared for florist flowers. You ought to have seen the single scarlet Anemone in great perfection. Bitton was rich in Saxifrages and Veronicas. My son has more rarities than I had, and recent novelties. I thought these few notes would interest you. I could not grow the double blue Hepatica at Bitton, and here it flourishes, but I managed Cistuses and Helianthemums well.—H. T. Ellacombe, *Clyst St. George, Topsham.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Aquilegia cœrulea.—This is flowering splendidly here. It delights in rich turfy loam. The border must be well drained, as damp often proves fatal to this fine plant during the winter months.—J. Whittaker, *Derby*.

Autumn-blooming Crocuses.—We generally associate Crocuses with the spring. The Rev. Mr. Ellacombe reminded us the other day, that of the forty-three species mentioned in Dean Herbert's monograph of the Croci, twenty-eight are autumn bloomers.

Dodecatheon integrifolium.—This has been one of the brightest gems in my garden during the past month. On one plant I have counted thirty-six flower-stems, with from sixteen to eighteen expanded flowers and buds on the stronger stems. It delights in rich peaty loam in a shady, sheltered situation. —J. Whittaker.

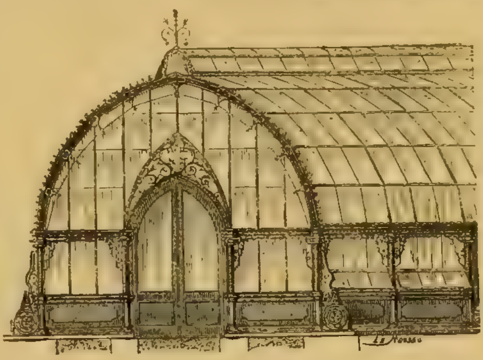
Top Dressing for Roses.—I am anxious to know if the malt or kiln-dust recommended by Mr. Rivers to be used as a top-dressing for Roses is the same as malt combings.—R. B. [The kiln dust used by Mr. Rivers is what accumulates behind the furnace, not combings which come from the malt when it is screened. Mr. Rivers uses one-half kiln dust and one-half horse-droppings, laid about 1 foot thick, then saturated with liquid manure, then turned over in the sun twice in about three days, when it may be used with good results on both Roses (pot or planted out) and fruit trees in pots.]

Yucca baccata.—This new and very distinct species, found in New Mexico, Utah, and Arizona, was introduced into cultivation in Europe last year by M. Linden, of Brussels. In the rigidity of its habit and the texture of its leaves, it bears a greater resemblance to Y. cornuta, or Y. Treculeana, than to any species of the aloifolia section. It has a thick, wrinkled stem, about a foot high, on the summit of which are closely crowded the short, straight, erect, pointed, boat-shaped leaves of a light green colour, bearing on their margins numerous long, broadish, and sharply pointed shaving-like appendages. The fruit is a capsule, as in all the Yuccas, but has the shape and fleshy consistence of a ripe Banana, by which name it is known to the natives of Western America. The taste is sweet and agreeable, and the Indians, who are very fond of it, gather and dry large quantities for winter use. The uncooked fruit is said to possess highly cathartic properties.—M.

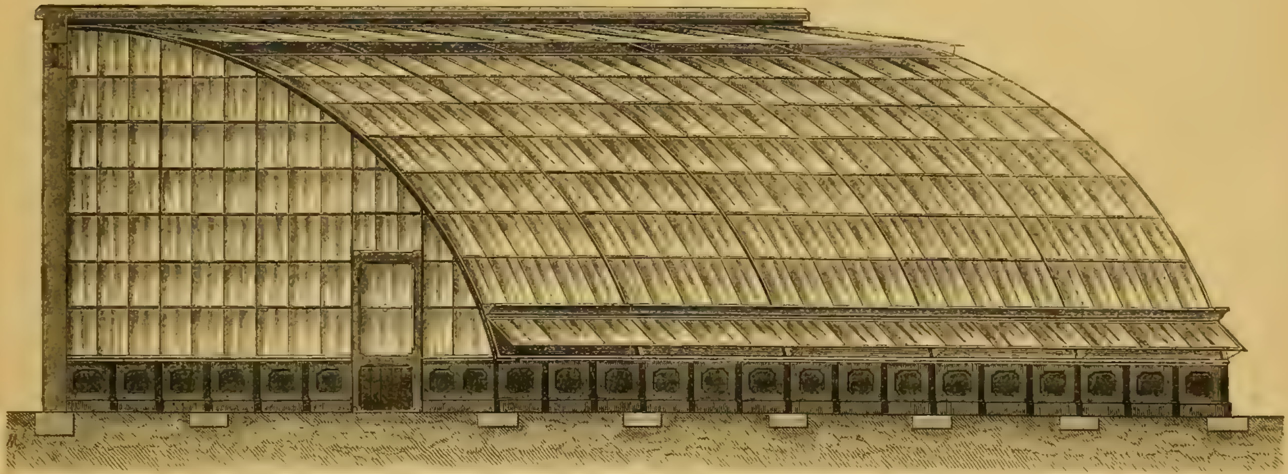
GARDEN STRUCTURES.

THE ALEXANDRA PROMENADE.

Among the garden structures shown at the Alexandra Palace on the opening day (May 24th), the conservatory of which the annexed engraving is a representation, was not the least remarkable. Erected on the main plateau at the south-western corner of the terrace, though necessarily dwarfed by the size of the Palace, it occupied a position admirably suited to display its distinguishing features to advantage. Being constructed entirely of iron, glass, and hydraulic cement concrete, and glazed with sheets of large size, it had a light and airy, rather than a substantial, appearance, but examined from a structural point of view its strength was found to be ample. The side columns, placed six feet apart, are of cast iron twisted, with a moulded base, and each is strutted by an ornamental buttress resting on a block of concrete. From these, the T iron rafters, bent to the desired form, spring and form the roof. Between the columns, meeting at the centre of each bay, are carved spandrels of elaborate tracery; and the walls are of hydraulic cement concrete slabs, moulded and manufactured under Mr Ayres' patent. These admit of a large amount of ornamentation, with this advantage, that not being attached to the soil they are tenants' fixtures in the fullest sense of the term. The shelving or stages for the plants are also formed of the same material, panelled to hold water for evaporation, and perforated for the warmed air from the source of heat to pass through them among the plants. The doors are gothic in shape, with a tracery spandrel over head, and there are graduated ornamental pendants from each angle of the rafters, and a cornice of perforated iron work runs round the inside of the house at the level of the spouting, forming a suitable finish. For ventilation, sashes open the entire length of the house just above the wall slabs on each side, and there are also similar continuous sashes in the lantern all opening simultaneously by means of ingenious machinery. The roof is glazed with Hartley's rolled plate glass in large sheets, held in position by Mr. Ayres' recently patented glazing tube. This may be made of sheet copper or zinc, and though of great strength, is sufficiently elastic and compressible to yield to the expansion of the glass. E. A.



The Alexandra Promenade.



A Curvilinear Vinery without bent glass.

THE KITCHEN GARDEN.

DEEP CULTIVATION.

The question of more deeply disturbing and manuring the soil and subsoil is too important to be treated with levity or flippancy, for it greatly affects the amount of production of human and animal food. The opponents to deep cultivation say the plant multiplies its fibres or roots in the surface soil; of course it does, and why does it do so? because the surface soil is cultivated, loosened, manured, aërated, and, moreover, much warmer than the lower soil. It is, therefore, unmistakeably evident that these conditions should be, as much as possible, imparted to the subsoil, where they are wanting; for when undisturbed and unmanured it is too dense, too cold, and too poor, and therefore too unattractive to the roots of plants, for the latter have as great an instinct as the animal tribe as regards their search for food. Many people won't believe that we cannot manure the under soil through the top soil, but that profound departed philosopher, Baron Liebig, proved this, therefore it becomes necessary to uncover the subsoil and intermix the manure with it. How well that late worthy and most intelligent man, the Rev. Mr. Smith, of Lois Weedon, understood and practised this system, and, as a consequence, what extraordinary crops he grew, as I know by personal observation. I have abundant experience in that matter on my own farm and in my own garden and shrubbery, and facts justify my insisting upon the importance and advantage of disturbing and manuring the subsoil, but not to attempt to do so through the top soil, for the top soil has the power to intercept and appropriate all, or nearly all, the ammonia, potash, and phosphate of lime that you have intended for the lower soil. In my conservatory I bore holes to the depth of 2 to 3 feet with an iron or stick, and down these holes pour guano and water, or liquid manure, and the consequence is an immense development of flowers on my Camellias. No such results occurred when the fluid was merely applied to the surface, for then its material ingredients never reached the lower roots. Some years ago, when I kept many pigs (350), I ploughed and then forked the poor and raw subsoil, throwing it into high ridges. Deep in the furrows I applied the pig manure, and forked it into the subsoil. The consequence was 43 tons of Mangel Wurzel per acre, and excellent crops ever since. On another field well subsoiled, but less deeply cultivated and manured, I only grew 30 tons per acre; but so numerous are the evidences of the increased produce resulting from soils with subsoils deeply fertilised by nature or by man, that it is quite unnecessary to say another word about it.—J. J. *Mechi, Tiptree.*

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—The planting out of summer bedding plants should now be finished as speedily as possible. Sub-tropical plants, such as Cycas revoluta, Palms, Musas, and similar material, should also be transferred to their outdoor quarters, giving them positions in which their beauty will be set off to most advantage; yet they must be sheltered, and not too confined with surrounding vegetation. Monstera deliciosa does well in a warm place under the shade of trees, and forms a good companion to tender Ferns, which may also be accommodated there. Plants of the green and also of the variegated leaved New Zealand Flax look well planted out, or plunged as centres to small flower beds, or used as specimens for conspicuous places, such as vases on terraces. American Aloes and Yuccas may likewise be used in the same way. Rose budding may now be commenced as soon as convenient; remove a goodly portion of the straggling wood, but preserve almost intact the shoots on which the buds are to be inserted. Propagate herbaceous plants by means of cuttings inserted in a prepared piece of border under hand-glasses. Transplant biennials from last spring's sowings, but if they have not yet been sown sow them at once.

Conservatories.—Passifloras, Bignonias, Kennedyas, Hibbertia dentata, Lonicera sempervirens, and similar plants, must now be regularly thinned, taking care to preserve as large a quantity of young wood as possible, without overcrowding, and permitting the shoots, after they reach a certain height, to hang down in graceful festoons. Keep up a good succession of flowering plants from greenhouses and frames, to replace those going out of flower.

Greenhouses.—These being now clear of bedding plants, may be filled with annuals, Pelargoniums, Fuchsias, Hydrangeas, Begonias, &c., in order to forward them for the decoration of the conservatory. Hydrangeas are now coming nicely into bloom, and require some assistance in the way of manure water; any shoots not furnished with flower buds should be removed, and used for purposes of propagation. By means of plenty of ventilation, complete exposure in fact during fine weather, retard the show Pelargoniums; zonal kinds for late flowering may now be cut over, partially starved for a while, kept out of doors, and if repotted and started into growth six or seven weeks hence they will form nice flowering plants when others begin to lose their beauty. Pinch, thin, and encourage Fuchsias, and keep Celosias, Coleuses, Iresines, &c., in a growing condition. Maintain successions of Mignonette, Asters, Stocks, Schizanthuses, and other annuals. Old roots of Cyclamens not bearing seed pods may be transferred to a frame having a north and shady aspect, and kept moderately but not entirely dry. The young ones must be kept in a good growing state. Liliums should be top-dressed, and kept in cool or warm houses, according to the time when they are required to come into flower. Plants of Spiræa japonica that have done flowering should be transplanted into a plot of ground that is rich, moist, and warm. Sow Cineraria seeds and prick off seedlings, which, when they are fit to handle, should be potted separately into small pots. Suckers from the old plants should be potted as soon as they are large enough, and afterwards kept in a frame having a north aspect. Mark some of the very finest of the herbaceous Calceolarias for keeping until next year, and such plants as are selected to bear seed should be placed near the glass, and others removed as they begin to fade.

Stoves.—Fine-leaved plants now form a chief feature in stoves; every encouragement must, therefore, be given them, in order to promote the proper development of the foliage; they should have a moist, warm, and steady atmosphere, plenty of tepid water at the root, and daily sprinklings overhead with the syringe. The young leaves of the finer Anthuriums must be kept clear of foliage, which should be put aside, so as not to impede their growth. Several plants will require stakes, which should be neatly and sparingly applied. All young stock should be shifted before the pots containing it have become filled with roots. Remove such plants as are in flower to the coolest end of the house, if practicable. The propagation of stove plants from cuttings should, as a rule, be suspended for a time, until the wood becomes a little firmer than it is at present, but such as were propagated earlier should be potted as they become well rooted. Poinsettias, however, are an exception, and the sooner good cuttings can be obtained from them and rooted the stronger the flowering plants will be. The young shoots nearest the end of the branches may be removed for this purpose, and about four or six of the lowermost left on the old plant if it is to be retained.

Hardy Fruit Garden.—Attention must now be paid to thinning and otherwise regulating the young shoots of wall trees, to which an occasional good washing with clean water from the garden engine is very beneficial. Young shoots of trees in nursery beds should be loosely attached to stakes in the form which they are afterwards intended to retain. See that the clay does not prematurely fall off lately grafted plants, and if it does, replace it with a fresh application. Cut away any spray that may grow upon the trunks of standard trees, also most of the strong shoots that come up in the centre of open or cup-shaped fruit bushes. Remove suckers from Raspberries, fruit tree stocks, &c. As soon as Strawberries are set a good soaking of manure-water should be given between the rows. Prepare nets for these and Cherries.

Kitchen Garden.—Earth up and stake advancing Pea crops; give those forming pods good soakings of manure-water, and sow some of Knight's Tall Marrows and early sorts for late produce. Earth up Beans, and top such as have come into flower. Cabbages are tender and good, and are hearting well; when removed loosen the ground which they occupied with a fork and plant Lettuces, Savoys, or Brussels Sprouts; or if Seakale or Potatoes were planted between the Cabbages they will now require the additional room. Prick out or thin in the seed beds Coleworts, and plant out in various positions Lettuces, Cauliflowers, sprouting and close hearting Broccoli, Brussels Sprouts, some Savoys, and Curled Kale. For the main crop of Kale, as well as a large portion of the other crops, the ground cannot be got ready until the early Potatoes are lifted, the transplanted Onions removed, and also some of the earlier Cabbage and Turnip crops. Asparagus cutting, in the case of young plantations, should now cease; but, on old-established ones, "grass" may still be cut until the end of the third week of this month, when green Peas from the open ground will be plentiful. Plant out Celery in prepared trenches, which may be cropped for the time being with Turnips, Spinach, Radishes, Lettuces, Endive, or any other crop that will be soon ready for removal. Beet may now be finally thinned to about 9 inches apart; more room would have a tendency to encourage the growth of large roots, which are objectionable. Thin Parsnips to a foot apart, and Carrots to from 9 inches to 12 inches apart, according to the sort. Frame-sown Carrots are now large and good, first border-sown ones are likewise useable; and for a succession of tender roots, another small sowing of one of the Horn sorts should be again made. Keep up a succession of small salads by repeated sowings; but protect the seeds from birds until they germinate, and afterwards from slugs and snails. Keep the hoe at work amongst growing crops. Save all old refuse vegetables, such as Cabbage and Broccoli stumps, which, together with weeds, &c., should be thrown into a heap to rot. Dead bushes, boughs, and prunings of fruit-trees, old Pea-stakes, and similar material, should be gathered into a separate heap and charred, the ashes and charcoal from which, mixed with manure, making a valuable fertiliser. Dredgings of soot and lime amongst growing crops are very beneficial in obviating the ravages of slugs.

MARKET GARDENS.

Late frosts and cold winds have materially injured the more tender kinds of garden crops. Early French Beans, where unprotected, have been almost annihilated, and not one plant of the first crop of Tomatoes has escaped, so that fresh plantations have to be made. Cauliflowers raised out of doors have been greatly damaged, especially in low situations. Potatoes in exposed places have also suffered; but under the shade of trees they are safe. Strawberries, as a rule, promise to bear good crops. Plant out Tomatoes in well-prepared, rich, and sheltered ground, in rows three feet apart, and place a strong stake alongside of each. Those not yet planted out keep in frames, from which the sashes are removed, except when frost is apprehended. Protect Cucumbers in frames during cold nights with litter, but remove it early in the morning; and throughout the day, if favourable, tilt up the sashes at the back about an inch. Water abundantly, thin the shoots and fruit, and use tubular glasses for crooked fruits. Glasses 2½ inches in diameter, a foot in length, and open at both ends, are most suitable for this purpose. Plant out Vegetable Marrows as ground becomes vacant, and if some fermenting manure can be spared to put under each plant, as in the case of the earlier plantations, they start sooner and stronger into growth than they would if merely planted in the open ground, and only protected with handlights. Loosen the soil about those first planted out, and draw the earth around them in the form of little basins for the retention of water. Tilt up with a flower pot the south side of the handlights, which in all cases must still be used to protect the plants. Draw a little ridge of soil along the north or east side of rows of French Beans, in order to partially protect the young plants. Sow for succession and crop between the rows with Turnips, Radishes, Spinach, or Lettuces. Asparagus beds are still yielding a fair crop, but the time is at hand when cutting must be discontinued, as the plants were longer in coming into bearing this year than usual. Cutting may be continued until about the end of June. French Beans, Beet, Lettuces, Nasturtiums, &c., may be grown on the tops of the ridges. Turnips from early sowings are pretty good; hoe and thin succession ones, and sow again if necessary, just as the plants are germinating. If some lime and soot be scattered over the ground it greatly prevents the attack of the Turnip fly. Tie Cabbages around the middle with a piece of matting, to assist them to heart. Thin and stir the soil amongst spring sown ones. Coleworts are germinating, and those saved for seed are forming seed-pods. Seakale is pushing up strongly, Lettuces planted amongst the rows are being tied, and such as are fit are being removed for market, thus the Seakale gets additional light. Cabbages, Cauliflower, Lettuces, Turnips, and Radishes are generally the crops that are planted or sown along with Seakale; in fact, anything will do that is fit for removal before injury can be done to the Kale. Keep the short narrow hoes at work amongst Celery, Onions, Spinach, and other small crops, and the larger hoes amongst crops planted in rows a foot or more apart. Earth up, as required, Cabbage, Cauliflower, Potatoes, Peas, and Beans. The earliest crops of Celery may now be planted in single rows, 4 feet or 5 feet apart, the trenches in which the plants are inserted being about 6 inches deep, and a foot or 15 inches wide, with the intervening ridge planted with Lettuces. Transplant Leeks and also Marjoram in rows, a foot apart, and clean the spring sown Onions. Transplant Stocks and also Wallflowers, the former for summer flowering, and the latter under fruit trees or in other places for winter and spring blooming; save the seeding plants. Lift Hyacinth and Tulip roots, dry and store them, and let the ground occupied by them be devoted to Lettuces, Cauliflowers, Spinach, and other crops.

SOCIETIES, EXHIBITIONS, &c.

ROYAL BOTANIC SOCIETY.

June 11th & 12th.

This was a good show as regards plants; but fruit was scarce. The day was fine, and the attendance of visitors large. The grounds were most delightful, and the great show of Rhododendrons furnished by Messrs. Lane, of Berkhampstead, was of itself attraction sufficient to bring together a large company.

Stove and Greenhouse Plants.—These, to a great extent, consisted of plants fully described in former reports; nevertheless, they were reproduced in a remarkably fresh and well-flowered condition. In the class of twelve plants in flower, Mr. Baines was first, with a fine specimen of Anthurium Scherzerianum, Boronia pinnata, Dracophyllum gracile, Ixora coccinea, and some Heaths, Azaleas, and Aphelexis. Mr. Ward, Leyton, was second; and Mr. J. Wheeler, Stamford Hill, third. For six plants in flower, Mr. Baines was again first, with Hedaroma tulipiferum, Dipladenia crassinoda, Ixora coccinea, Phœnocoma prolifera, and two Heaths. Mr. J. Wheeler was second; and Mr. W. Kemp, Guildford, was third. In the nurserymen's class for half a dozen plants in flower, Messrs. Jackson and Sons, Kingston, were first, with a fine specimen of Ixora Griffithii, a grand Allamanda nobilis, and others. Mr. E. Morse, Epsom, was second; and Mr. B. S. Williams, Holloway, third. For twenty plants in 12-inch pots, Messrs. Jackson were first, with a very fine group of medium-sized specimens, including Hibbertia Readii, Pimelea spectabilis, Tetratheca verticillata, Stephanotis, and others; Mr. J. Wheeler was second, and Mr. G. Wheeler third. For twelve plants shown under the same conditions, Mr. Ward was first, with remarkably fine plants of Statice profusa, Kalosanthes Frederick Desbois (one mass of brilliant red flowers), Bougainvillea glabra, Phœnocoma prolifera Barnesii, and various others. Mr. E. Morse was second in this class, and Mr. W. Kemp was third.

Orchids.—These were fully as good as any that have appeared this year at any previous metropolitan show. In the amateurs' class of twelve exotic Orchids, Mr. Ward was first, with a plant of Masdevallia Harryana, with nine beautiful flowers, two varieties of Odontoglossum Alexandræ, Cypripedium villosum, Lycaste Skinneri, a grand specimen of Phalænopsis grandiflora, good plants of Aërides Larpentæ and Lobbii, and others. Mr. Cuthbert, Chase Park, Enfield, was second, having good examples of Dendrobium Dalhousieanum and Vanda Batemani, and Mr. G. Wheeler was third. In the amateurs' class of six plants, Mr. Ward was again first; he had a superb specimen of Cypripedium Stonei, with three flower spikes, Mr. R. Ritchie, Frognal, Hampstead, was second, and Mr. J. Wheeler third. In the nurserymen's class of a dozen Orchids, Mr. B. S. Williams was first with large and fine plants, and Mr. Wm. Bull was second with somewhat smaller, but still very fine plants of a rare and choice description. Mr. B. S. Williams was also first with half a dozen in the nurserymen's class, the kinds being Thunia alba, Anguloa Clowesii, Saccolabium guttatum, Cypripedium caudatum, C. barbatum superbum, and a specimen of Aërides Larpentæ, with three flower spikes. Mr. E. Morse was second with a very fine group, and Messrs. Jackson and Sons third.

Roses.—From Messrs. Paul and Sons came nine very fine specimen Roses in pots, remarkable for the size and freshness of their blooms. The sorts were Horace Vernet, Reine du Midi, Charles le Febvre (fine), Celine Forestier, Nephetos, Francis Fontaine, Madame Victor Verdier, Madame Julie Doran, Juno, and Charles Lawson. Some good cut blooms of Roses were exhibited by Mr. W. Chard, Clarendon Park, Salisbury, and J. Hollingworth, Esq., Maidstone. Mr. R. Webb, nurseryman, Reading, showed a marvellously fine collection of blooms of Marechal Niel, and also branches of it, on each of which were four blooms in a cluster.

Pelargoniums.—Of these there were fine collections, some of the show varieties being individually of prodigious proportions. For nine show kinds Mr. W. Nye, gardener to E. Foster, Esq., Clewer Manor, Windsor, was first, and Mr. Ward second. Both these groups consisted of plants some 4 feet in diameter, and bearing clouds of flowers; the sorts were chiefly—Mdlle. Patti, Lord Clyde, Rob Roy, Woman in White, Shakespeare, Fair Rosamond, Elegant, Caractacus, Alabama, and others. Mr. James and Messrs. Dobson and Sons, received equal fourth prizes. In the class of six show sorts, Mr. J. Weir, Hampstead, was first; Mr. James, second; and Mr. McElroy, third. For six fancy sorts Mr. Weir was first with Mrs. Mendel, Crystal Beauty, Miss-in-her-teens, Mrs. S. Hodgson, Liberty, and Roi des Fantaisies; Mr. James was second; and Mr. King, Wolsey Grange, Esher, third. Mr. Thomas Pestridge, Uxbridge, showed twenty sorts of tricolor Pelargoniums, all very fine and distinct; and Mr. Wm. Paul, Waltham Cross, exhibited a collection of tricolor, bicolor, and ordinary zonal sorts grafted as standards, also a group of dwarf tricolor kinds, and cut blooms of zonal sorts.

Heaths.—There were but few sorts amongst these to which we have not already referred in previous reports; those from Messrs. Jackson were, however, all that could be desired, and the same may be said of groups from Mr. Ward, Mr. Kemp, Mr. Morse, and Mr. J. Wheeler.

Hardy Herbaceous Plants.—Every successive show furnishes evidence that these are coming more and more into favour. The best exhibition of them on this occasion came from Mr. Ware, Tottenham. In this group were Veronica Barrelieri and others, Libertia grandiflora, Cypripedium spectabile, and Dianthus alpinus, a great assortment of Funkias, Viola persicifolia, Equisetum Drummondii, the foliage of which was very fine, Delphinium nudicaule, a hose-in-hose variety of Mimulus, and many kinds of Sedums, Saxifrages, and other plants. For a dozen specimens of herbaceous plants, Mr. R. Parker, Tooting, was first, with several varieties of double-flowered Pyrethrums, Iberis correæfolia, some varieties of Iris germanica, Spiræa japonica, Veronica verbenacea, Anthericum liliastrum, Aquilegia cærulea, and Armeria plantaginea. Mr. Ware was second. For cut flowers, Mr. Parker was again first, and Mr. Ware second, both having extremely fine collections. Mr. Ware showed some fine blooms of English and fancy Pansies, as did also Mr. Hooper, of Widcombe Hill, Bath, whose flowers were of great merit, being wonderfully large and brightly coloured.

Ferns.—These were large and the plants in vigorous health. For six stove and greenhouse sorts, Mr. Baines was first with fine plants of Cyathea dealbata and Dicksonia antarctica, huge specimens of Gleichenia rupestris and Speluncæ, a large pan of Davallia bullata, and a very fine example of Lomaria zamiæfolia. In another class of six stove and greenhouse Ferns, Mr. R. Ritchie was first with a very fine half a dozen, consisting of a grand specimen of Davallia Mooreana, Pteris scaberula, Lomaria gibba, Adiantum Farleyense, Gleichenia microphylla, and Dicksonia antarctica. Mr. G. Wheeler was second in this as well as the previous class, and Mr. J. Jeal, Regent's Park, third. Mr. G. Wheeler received a first prize for a pair of fine tree Ferns.

Fine Foliaged Plants.—In this class, and also in that of fine foliaged herbaceous plants, there seemed to be some confusion; in some cases they consisted of stove plants, such as Caladiums, and in others, wholly of hardy plants, such as Funkias, Sedums, &c. For six fine foliaged plants, Mr. Baines was first with fine examples of Sarracenias, a Croton, a plant of Gleichenia Speluncæ, one of Dasylirion acrostrichum, and another of Theophrasta imperialis. Mr. Foreman was second with a fine example of Cupania filicifolia, and Mr. R. Ritchie was third. For six fine foliaged herbaceous plants, Mr. Jeal was first with six large Caladiums; Mr. T. S. Ware second with hardy plants, consisting of Hemerocallis Kwanso, fl. pl. fol. var., Funkias, the variegated Sedum japonicum, and the variegated Spiræa ulmaria; Mr. G. Wheeler was third.

Caladiums, Begonias, and Gloxinias.—In the class of six Caladiums, Mr. Ritchie was first, with very fine plants; Mr. G. Wheeler second; and Mr. J. Priseman, The Ferns, Tunbridge Wells, third. For half a dozen Begonias, Mr. Walker, Gunnersbury House, Acton, was first, with good plants of the old-fashioned ornamental-leaved kinds—viz., The O'Donoghue, Princess Charlotte, Rex, Marshallii, Rollissonii, and Roi Leopold; Mr. Farrow was second. From Mr. King came a fine group of Gloxinias, the specimens being large and profusely flowered; Mr. Farrow and Mr. Foreman likewise supplied Gloxinias.

Palms.—Mr. Wm. Bull furnished half a dozen very fine Palms, for which he was awarded a first prize. They consisted of Areca Baueri, A. sapida, Kentia Forsteriana, Hyophorbe Verschaffeltii, Dæmonorops melanochætus, and Calamus adspersus.

Miscellaneous Subjects.—Messrs. Veitch and Sons contributed an admirable collection of plants, consisting of Japanese Maples, some of the newest and best of Dracænas, Crotons, Palms, Ferns, the fine Aralia elegantissima and Veitchii, Dieffenbachia Braziliensis, several pretty little plants of Sonerilas, and several new and rare Orchids. The same firm likewise exhibited a collection of Rhododendron and hardy Azalea blooms, also blooms of double-flowered Pyrethrums, and a branch of Fremontia californica laden with large yellow flowers. Mr. B. S. Williams showed some pretty new plants, and Messrs. Rollisson a fine group of the finer kinds of stove and greenhouse plants. Mr. Bull exhibited a group of the newer sorts of Marantas, Dracænas, Crotons, Palms, and Cycads. Messrs. E. G. Henderson showed a fine group of herbaceous Calceolarias, and another of stove and greenhouse plants. Messrs. Jackman and Son, Woking, contributed a collection of cut flowers of Clematises, also some dark-coloured flowered Clematises in pots. Mr. Adam Forsyth, of the Brunswick Nurseries, Stoke Newington, sent some flowers of Chinese Chrysanthemums; and Messrs. Adcock and Co., Princes Street, a stand of artificial flowers.

Fruit.—Pines were in no way remarkable; they came from Mr. J.

Hepper, Acton, and Mr. W. Birse, Finchley, and were confined to the Queen variety. For a green-fleshed Melon, Mr. Cross, Renacombe Park, Cirencester, was first with a nice little fruit of Bellamore Hybrid; Mr. Hepper was second with Strathfieldsay. The winning scarlet-fleshed Melon was a fine little fruit of the Moreton Hall, from Mr. W. Coleman, Eastnor Castle, Ledbury; Mr. Hepper was second with scarlet Gem; the last-named exhibitor also showed a collection of Melons. Grapes were very good; for a basket of 12 lbs. of any variety, Mr. C. Little, Hall Place, Maidenhead, was first, with large and fine fruit of the Black Hamburgh; Mr. J. Smith, Lancashire, was second with Muscat of Alexandria, and Mr. G. Osborne, Finchley, third with Black Hamburgh. For a dish of three bunches of Black Hamburgh Grapes, Mr. J. Bashford, E. Sutton, Kent, was first with large and fine fruit; Mr. Coleman was second with fine symmetrical bunches, closely set, and perfection as regards colour, plumpness, and bloom; indeed, they appeared to be the best finished and ripened clusters of Grapes in the exhibition; Mr. J. Bannerman was third with excellent fruit. For a dish of any other black sort Mr. Bannerman was first with very fine bunches of Black Prince, the berries of which were well ripened and beautifully bloomed; Mr T. Davies, Turville Park, Henley-on-Thames, was second with the same sort. For a dish of Muscat of Alexandra, Mr. Priest, Enfield Green, Staines, was first, and Mr. Smith, second. For a dish of any other white Grape Mr. H. Stapleton was third with white Frontignan. The Peaches were very fine; for two dishes Mr. Coleman was first, with A Bec and Early Grosse Mignonne; Mr. Bennet, Hatfield, was second, with early Grosse Mignonne and Royal George; Mr. Bannerman was third, with Millet's and Royal George. For two dishes of Nectarines, Mr. Kemp was first, with fine fruits of Hunt's Tawny and Elruge. For two dishes of black or red Cherries, Mr. G. Ward, Bishop Stortford, was first with Rose de Lyons, the dark red fruits of which were very large and fine; and Mr. T. Mills was second with Black Circassian and first with Elton in the class of white Cherries. Strawberries were of excellent quality; Mr. Davies was first for a dish of President; Mr. Bennet second, with Dr. Hogg; and Mr. J. Plumbridge third, with Sir Jos. Paxton. Mr. Coleman was first with a dish of excellent Brown Turkey Figs. Mr. W. Gardiner, Lower Eatington Park, sent some Apples in a good state of preservation. Mr. Cadger, Wrotham Park, Barnet, showed a brace of his hybrid white-spined Cucumber, also a double one consisting of two distinct fruits joined together; each representing the different parents from which this hybrid was raised, viz., the Luton and Cox's Volunteer.

Certificates of Merit.*—These were awarded to the following:—

Aralia elegantissima, Adiantum speciosum, Cypripedium Stonei platytænium, from Messrs. Veitch and Sons.

Dracæna amœna, Cyathea Burkei, Cycas imperialis, Odontoglossum Insleayii leopardianum, Chamærops humilis variegatus, Campsidium filicifolium, Croton grande, Phyllanthus nivosus, Dracæna Fraseri, Croton majesticum, from Mr. Wm. Bull.

Æchmea bracteata (Rollisson), a strong growing Bromeliad, with a tall branched flower spike.

Gloxinia Brilliant (Rollisson), a beautiful scarlet finely formed flower.

Aralia Guilfoylei, Cydobothra pulchella, Stadmannia sorbifolia, Coleus Verschaffeltii splendens, from Messrs. E. G. Henderson & Son.

Clematis Miss Crawshay (Jackman), a rosy lilac, well-formed flower.

Clematis Mrs. Geo. Jackman (Jackman), a large, white, and well-formed flower.

Saxifraga nepalensis (Parker), a strong-growing, long, and silvery-leaved kind, bearing a great pyramid of flowers and producing from the base a large quantity of lateral flower-spikes. It is a grand exhibition specimen, one plant being sufficient for a large pot.

Agave Gilbeyii (Peacock), a dense growing plant in the way of univittata, with the spine of xylonacantha.

Agave striata var. Richardii (Peacock), a dwarf, compact plant of the Bonapartea type.

Agave Baxterii (Peacock), a medium-sized growing plant, with entire margins.

Agave Kerchovii (Peacock), a strong-growing sort, with formidable spines a considerable distance apart; quite distinct.

Echinocactus Mirbellii nigrispina, a sort deeply channelled into six ribs, covered with small snowy-like spots.

Pilocereus fossulætus (Peacock), in the way of the "Old Man" Cactus, but having strong brown spines.

THE RHODODENDRON SHOWS.

Nothing in the way of flowering plants can surpass in brilliancy the three great exhibitions of Rhododendrons now to be seen in the neighbourhood of London. Among Rhododendron blooms may be found all shades of colour between the purest white and the darkest crimson, and these, too, on plants sufficiently late in flowering to escape spring frosts. High cultivation and careful selection have also a most influential bearing on the character of the flowers, as regards size of trusses, fine form, and pure and brilliant colouring. Somewhat tender sorts, grafted on hardy stocks, often flourish when, on their own roots, they would not succeed. Rhododendrons are not so particular as to soil as is generally imagined; for, although a peaty compost is certainly best for them, they will not only grow, but will flower well in sandy loam, provided it does not contain lime, which they dislike.

Alexandra Palace.—Near the Palace, under a large marquee, is Messrs. John Waterer and Sons' Rhododendron exhibition. The ground on which it is arranged is laid out after the fashion of that at South Kensington and the Regent's Park, and the beds are occupied by superb plants of considerable size and of the choicest varieties. In addition to the plants in beds, which are striking and effective in the extreme, there are fine isolated examples of Roseum superbum, gloriosum, Lady Eleanor Cathcart, and Everestianum—all perfect clouds of bloom. New varieties are not plentiful; but many unnamed seedlings are extremely beautiful and promising. Amongst the older sorts, Duleep Singh stands prominent as a dark crimson. Joseph Whitworth is still one of the finest purple sorts, and Lady Dorothy Neville is another very fine sort. Michael Waterer is one of the best of brilliant scarlets, Lady Tankerville an extremely pretty and showy delicate Rose, and Ellen Waterer one of the finest flowers, of a white colour, edged with scarlet.

Royal Horticultural Society's Garden.—Under a marquee here, some 60 yards in length by 40 yards in width, are Mr. Anthony Waterer's Rhododendrons. Here, as elsewhere, the ground is tastefully laid out in beds, raised on turf terraces, intersected by winding walks. The plants are now at their best as regards bloom, and are well worthy of a visit. All the plants assembled here have been grown at Knap Hill, where the soil is particularly well suited for them. Among them are some extremely pretty unnamed seedlings, but such fine kinds as Mrs. William Bovill, Sir C. Napier, Alexander Dancer, Lady Clermont, Stella, Wm. Downing, Mrs. Milner, and others will be difficult to match as regards effect.

Regent's Park.—Here Messrs. Lane's Rhododendrons nobly uphold the position assigned to them. The tent in which they are shown is tastefully laid out, and the Rhododendrons as tastefully intermingled with other things, the dense mass of colour being relieved by the presence of Laburnums, choice Conifers, Ivies, and a few other miscellaneous ornamental plants. The Rhododendrons shown here have all been grown in a loamy soil and they serve to illustrate the fact that peat is not essentially necessary for their growth; even if they were in peat it would be difficult for them to produce greater masses of flowers than they are now bearing. Amongst the white flowered sorts Purity, Mrs. John Clutton, and The Queen are very fine; and amongst the red or darker coloured kinds are Madame Van der Weyer, Concessum, Lord John Russell, fastuosum fl. pl., Caractacus, Alarm, and many others.

COVENT GARDEN MARKET.

June 13th.

From the Continent and Channel Islands we have this week several thousands of packages of Cherries, Apricots, Tomatoes, Strawberries, Artichokes, Turnips, Carrots, and small salads. Of New Potatoes great quantities have also arrived, and are readily sold at 2d. and 3d. per lb.

Prices of Fruits.—Apples, per doz., 2s. to 3s.; Apricots, 2s. to 3s. per doz.; Cobs, per lb., 2s. to 2s. 6d.; Cherries, per box, 2s. to 4s.; Gooseberries, per quart, 3d. to 6d.; Grapes, hothouse, per lb., 6s. to 15s.; Lemons, per 100, 6s. to 10s.; Melons, each, 6s. to 12s.; Oranges, per 100, 6s. to 12s.; Peaches, per doz., 18s. to 36s.; Pine-Apples, per lb., 8s. to 12s.; Strawberries, per oz., 6d. to 1s.; Walnuts, per bushel, 15s. to 30s.; ditto, per 100, 2s. to 2s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 3s. to 6s.; French, 4s. to 12s.; Beans, Kidney, per 100, 1s. 6d. to 2s. 6d.; Beet, Red, per doz., 1s. to 3s.; Broccoli, each, 6d. to 9d.; Cabbage, per doz., 1s. 6d. to 2s.; Carrots, per bunch, young, 1s., old do., 8d.; Cauliflower, spring, per doz., 8s. to 12s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 4s.; Cucumbers, each, 4d. to 1s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 6d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 8s. to 12s.; button, per quart, 1s.; Parsley, per doz. bunches, 6s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 2s. to 3s. 6d.; Potatoes, new, per lb., 3d. to 6d.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Scorzonera, per bundle, 1s.; Shallots, per lb., 6d.; Spinach, per bushel, 3s.; Turnips, old, per bunch, 6d., young do. 1s. 6d.

ANSWERS TO CORRESPONDENTS.

Pears (E. T. R.)—Your Pears have evidently been eaten away by larvæ, but no larvæ were in your letter. We have seen the creatures, however, and they are figured in Smee's "My Garden," p. 490, where you will find a brief account of such pests.——Vine Leaves (E. T. R.)—Your Vine leaves are thickly infested with the white mycelium of Oïdium Tuckeri; the orange coloured spots appear to be a merely more luxuriant growth of this mycelium upon damaged spots on the leaves—where the mycelium is orange the tissues are quite decomposed.——Berberis (J. P. F.)—Messrs. Dickson and Co., Chester.——Slugs (J. W.)—Try what effect air-slaked lime has on them.——Saxifrages (Rocks.)—Your three specimens of a variety of Saxifrage belong to a section of which all seem to be linked together by intermediate forms. Seedlings of some of the specimens are endless; as, for example, the varieties of S. longifolia. No. 1 seems to come between S. Aizoon minor and intacta; 2, between S. pectinata and S. crustacea; 3, between S. ligulata and S. vernalis.——Sedums (Rocks.)—Sedum dasyphyllum and S. corsicum are different plants in cultivation, the former being the larger of the two, and pale coloured. The latter, S. corsicum, is dwarf and compact, and of a much darker colour all over than S. dasyphyllum.——Pansies (Mrs. E.)—Cuttings of these should be struck in August and September, and wintered in a cool frame. Young growing plants always produce the best blooms. A mixture of leaf-mould, loam, and well-decayed stable manure suits them perfectly; and, where the soil is heavy, add an equal proportion of good sharp sand. Pansies prefer a shady border, as, when exposed, the summer sun burns out their colour and prevents them from forming good flowers.——Names of Plants (Anon.)—Your leaf seems to be a barren frond of a Polystichum—probably P. angulare. Ferns are not easily distinguished in the barren state.——(Pyrus.)—1. Pyrus torminalis; 2. Pyrus domestica (true Service); 3. Pyrus pinnatifida; 4. Pyrus intermedia; 5. Pyrus spuria.——(Usk.)—Apparently a seedling Ilex latifolia; certainly not a Ligustrum or Euonymus, as they have opposite leaves.——(E. S.).—1. Cotoneaster microphylla; 2. Gymnadenia conopsea; 3. Some Iberis (indeterminable); 4. Hemerocallis flava; 5. Habenaria bifolia; 6. Gnaphalium arenarium; 7. Allium Moly; 8. Cephalanthera grandiflora.——Adiantum Capillus Veneris (F. H.).—It will live out of doors in sheltered warm situations, but in cold localities it succeeds best under glass.——Phœnocoma (Junior).—Next week.

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* Several of the plants that received certificates on this occasion have received similar awards elsewhere, and have been described by us in former reports.

THE GARDEN.

"This is an art
Which does mend nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

LIME-KILN HEATING.

An excellent paper on this subject was read the other day by Mr. Cowan before the Dublin Horticultural Club:—Within a short period (said Mr. Cowan), almost all the materials used for heating have been doubled in price. This, of course, in a material degree, increases the first cost, and especially when we consider that labour has also become much higher. But the great increase in the first cost is not, after all, such a serious matter as the enormous increase which has taken place in the price of fuel. When a building has been fitted with a good heating apparatus the expense may reasonably be expected to be done with for years, but this is not the case with fuel, which is a continual and a heavy tax. A great deal has been done in the way of introducing boilers calculated to economise heat and save fuel, but still, as some one has remarked, "no more than a certain amount of heat can be got out of a given quantity of fuel, economise it as you will." Consequently, with the best boiler that can possibly be procured, a considerable quantity of fuel must be consumed in comparison with the extent of buildings to be heated. And it is just here that the great value of lime-kiln heating is made apparent. I do not claim for it merely a greater degree of economy than other systems. I claim for it the merit of heating any extent of building by hot water entirely free of cost, except the first outlay for materials and construction of the apparatus. The depth of the stokehole required is, of course, greater than would be the case for a boiler only, but very little more than is needed for a tubular boiler; from 10 to 12 feet under the level of the flow pipes will admit of a good-sized apparatus being fixed; 13 feet, with a proper boiler, would be sufficient for an apparatus to heat 3,000 feet of 4-inch piping. Much less could be made to do, but it would not be so satisfactory. The kiln is built very much in the shape of an egg, with the narrow end downwards, and is lined inside with fire bricks or other suitable material, another wall is carried up at the same time and of the same form as the one forming the kiln, but with an intervening space of about nine inches. This space is filled up with sand as the two walls are carried up, the sand being put there for the purpose of retaining the heat, which it does most effectually. When the kiln has been carried to the proper height, a hot-water boiler is placed on the top, and built in just the usual way, but of course there are no fire bars required, and only one door; this door is the place at which all the fuel and stones are put in, and the burned lime is drawn out at the bottom, a small opening being left there for that purpose, just sufficient to admit of a shovel being introduced. The working of the apparatus is extremely simple, and may be taught to any ordinary garden labourer in a very short time. When the extent of the building to be heated is not great, I recommend the use of the ordinary saddle boiler, on account of its cheapness and durability, and the boiler which I have designed especially for the use of this system is simply a saddle boiler with some additions to it, to make it better adapted to this system. In order that the merits of this boiler may be appreciated, it must be understood, that when anthracite coal is used there is almost no smoke and scarcely any soot to collect in the flues, consequently the great object is to confine the heat sufficiently long about the boiler until the greater part of it has been utilised, and it will at once be seen that this boiler is eminently calculated to attain this end; it has also the advantage of being low, and consequently does not increase the necessity for depth of stokehole to a very great degree.

But, it may be asked, why place the boiler on the top of the kiln? why not form the whole, or at least a part of the kiln with the boiler? and thus have the fire right in the centre of it. A very good answer to these questions has been furnished by Mr. Collis of Millmount, Kilkenny. I was much surprised to learn that that gentleman had had an apparatus for burning lime and heating his garden structures on the hot water system, at work for the past four years. I did not know that such a thing had been done in either this or any other country until some time after I had completed my patent; I did not even know anything for certain about it until about three weeks since, when a gardener who was sent by his employer to inspect my system at Dromore was also requested to call there on his way, and from the account which he gave me, I could learn that Mr. Collis's principle was entirely wrong, although I confess I did not expect that it could be such a failure as Mr. Collis himself proves it to be in an account which he has published in The Garden (see p. 441). His statements are accompanied by an illustration, not, however, of the apparatus which has been in use for four years, but of one which he is now having erected. The illustration in question shows a tubular boiler 3½ tons weight, fixed right in the centre of a kiln 17½ feet deep, and Mr. Collis states that he expects it will heat 5,000 feet of 4-inch piping, and no one can deny that it is quite large enough for this purpose, but he has not yet tried it, and I venture to express my strong conviction that it will never do anything of the kind with satisfaction.

Mr. Collis says that the kiln which he has worked for four years is 3 feet 6 inches in diameter, and 12 feet high. The boiler, a horizontal tubular one, is 4 feet high, and encircles the kiln near the top, the mouth being left open, and the smoke and smell allowed to make the best of their way out of the place. This kiln and boiler, Mr. Collis tells us, are capable of heating a thousand feet of 4-inch pipe sufficiently for ordinary forcing purposes; and, as he wished to heat 2,000 feet, he had to supplement it this spring with an ordinary 3-feet tubular boiler. Thus, all that Mr. Collis has been able to accomplish with his kiln hitherto is to heat 1,000 feet of 4-inch piping. I wish particular attention to be paid to this statement, for he tells us that to accomplish this he had to burn two tons of culm per week; and, more wonderful still, he only burnt three tons of stones with his two tons of culm. To burn three tons of stone in our kilns at Dromore, we require just 14 cwt. of culm, and that amount heats to any required degree, with an ordinary saddle boiler, 1,000 feet of 4-inch piping; so that Mr. Collis requires just almost three times the amount of fuel to burn the same quantity of lime, and to accomplish the same amount of heating which we do, and a boiler probably three times the cost of ours. The one he is building in now cannot have cost much less than £200, and, calculating by the same scale which he gives us for the first, must burn about 10 tons of culm per week in order to heat 5,000 feet of 4-inch pipe. Culm costs him only 8s. 6d. per ton; but how would the case stand if it cost him, as it does us, 25s. per ton? Add to this the smoke and disagreeable smell which must come from an open kiln, consuming such an enormous quantity of fuel, and you have a perfect picture of that which has been put forth in one of our leading gardening papers to prove that the system which I am advocating is not new. Mr. Collis says he does not believe that heat can be had free of cost in his locality. Why, if I were in his locality, I should expect to make a handsome profit from the lime, besides having the heat free. With regard to the position of the boiler inside or on the top of the kiln, it is well to bear in mind the following fact:—When a kiln is formed of fire-bricks, they get heated to a very high temperature, and very materially assist in the burning of the lime; but this is not the case with a hot water boiler—it is kept comparatively cool by the circulating of the water, and thus in place of assisting in the burning of the lime, as the bricks do, it very materially hinders it—so much so, that Mr. Collis informs us that it causes the consumption of three times the amount of fuel; and there is another cause for Mr. Collis's want of heating power in proportion to the amount of fuel consumed, namely, that the greater part of his heat passes off by the mouth of his kiln. I think, then, that what I have stated will go far to prove that the top of the kiln is the right place for the boiler, and as my patents secure me equally well in putting it inside the kiln, you will see that I am only actuated by a desire to show the best means of obtaining the desired end. In order that the kilns may be allowed to continue burning, and the heat at the same time turned off the building which they are heating, I propose to fix the supply cistern somewhat near the boiler, and to have it somewhat larger than usual; into this cistern I propose to take two pipes in place of one, one from the flow and one from the return pipes, and when the water is shut off all the buildings, it will circulate into the cistern, and the house can thus be kept quite cool, and at the same time abundance of heat kept at hand to turn on at a moment's notice. This is a very simple arrangement, and not at all expensive, and will secure perfect command of the heat at all times. In conclusion, I may state that I expect this system of heating horticultural buildings will bring about a very considerable change in the production of fruit and flowers in this and other countries.

NOTES OF THE WEEK.

—— The Irises round London are in full beauty now. They appear to thrive better on stiff clay soils than any other important class of hardy plants, and this fact should be taken note of by all whose gardens are on such soils.

—— Amongst the industries in which soldiers employ their leisure time in France, not the least is Strawberry cultivation. At Bagnolet, near Paris, 300 soldiers from the forts of Rosney and Romainville are daily occupied for six hours in Strawberry culture.

—— It was announced, at the Royal Horticultural Society's meeting last Wednesday, that, on the occasion of the Shah's visit to the Albert Hall on Monday evening next, the conservatory would be illuminated, and that nobody but those furnished with Fellows' tickets would be admitted.

—— Among bulbous plants at Kew we noticed the following the other day beautifully in flower, viz., Calochortus Leichtlinii and uniflorus, a nice tuft of Cyclobothra pulchella, with pretty golden yellow blossoms; Lilium tenuifolium, with small deep red flowers resembling those of L. chalcedonicum; and though not, strictly speaking, a bulbous plant, the curious Arum crinitum, with its singular-looking grey spotted spathes.

—— A writer in the *Prairie Farmer* says that, with the exception of the Peach belt along the shore of Lake Michigan, Peaches are generally killed through that State, and it is feared that many of the trees are also destroyed, the thermometer having sunk the past winter to 38° and 40° below zero. Apples, however, promise a full crop; Grape Vines are badly cut down, and Pear and Plum trees are much injured.

—— M. Louis Van Houtte, of Ghent, is about to publish a work on Orchids, which will be embellished with all the figures of those plants which have appeared from time to time in the 18 vols. of the *Flore des Serres*. Those who are familiar with the beauty of the coloured engravings with which that publication is illustrated will not be slow to recognize the importance of the reproduction of the Orchid plates in a separate work treating of that interesting family of plants.

—— An example, which may be profitably followed in many of our public institutions of learning, has been set by the students of the Friends' Academy, New York, in the formation of a Horticultural Society among themselves, twenty-four having joined at its organisation. The small admission fee is expended in the purchase of seeds, plants, and bulbs. A leading object of the society is ornamenting the grounds of the institution. In addition to the knowledge of plants which they thus obtain, the pleasant and healthful exercise and the intellectual recreation attending such work can hardly be over-estimated.

—— Of the various species of Linum with which our gardens are enriched, probably the most ornamental, as a border plant, is Linum narbonnense, which yields a profusion of pale blue flowers for a long time during the summer months. Of this a good white variety may now be seen in bloom in the herbaceous grounds at Kew, where it forms a worthy companion to the normal species. Associated with it may also be seen two other plants that are not so well known as they deserve to be—viz., Æthionema orientale, one of the prettiest species of the genus to which it belongs, and Oxytropis baicalia. The former has erect stems, woody at the base, and bears pretty racemes of bright rose-coloured flowers. The latter has dull white flowers, resembling those of O. campestris. On the rockwork may also be seen the rare Cathcartia villosa in bloom.

—— The presentation of a testimonial to Mr. Appleby (on the occasion of his retirement from his situation as foreman of the Dorking Nursery, where he has been employed upwards of 18 years), which was originally intended to take place at the approaching Bath Show, has, in consequence of the Secretary and Committee not being able to complete the necessary arrangements in time, been postponed to Sept. 3, when it will be made at the Great International Exhibition of Fruit at Manchester. Mr. Appleby has done good service to the cause of Horticulture, in raising some fine varieties of hardy Ferns, and we have no doubt that he will still continue to exercise his skill in that direction in the nursery which he is about to establish on his own account at Dorking.

—— Mr. Meehan, in his late travels in the Rocky Mountains, came on a tract covered profusely with one of the small creeping Euphorbias, probably E. cordata, in which a large quantity grew perfectly erect. Sometimes only a portion of the plant exhibited this character, at other times all the plant was upright. In all these cases the plant was attacked by a small fungus, Æcidium Euphorbiæ hypericæfoliæ of Schweinitz. He thought that the fact that this little fungus should be able to make a usually creeping plant, rooting from every joint, entirely lose this character and become erect, was worthy of some notice by students in this branch of botany.

—— The floral decorations at Charing Cross Station on the occasion of the arrival of the Shah, last Wednesday, were of the most profuse character, and were exhibited in wonderful variety. The greater part of the flowers, &c., were furnished and arranged by Mr. Dickson, of Covent Garden Market. We understand that Mr. B. S. Williams, of Holloway, has been entrusted with the floral decorations at the approaching festival at the Guildhall.

—— That splendid hardy shrub, Xanthoceras sorbifolia, which was named and described by M. Decaisne some years since, and of which only a single specimen exists in the gardens of the Muséum at Paris, is now completely covered with flowers. These are of a pure white, slightly tinged with lilac-rose on the margin, and are produced in dense and effective clusters. Few flowering shrubs are finer than this, and, when better known, it cannot fail to become a general favourite.

—— M. Louis Van Houtte, of Ghent, has just issued the first part of his "Pomone," a remarkable work, devoted to the description of our cultivated fruits. The present number contains descriptions of 431 varieties of Pears, followed by coloured plates representing fifty of the best kinds, which are figured with a degree of art and truth of which it is impossible to speak too highly. In addition to this there are outline figures of thirty-six other varieties. We have never seen anything approaching the beauty and accuracy of the coloured figures, and we are happy to call attention to a work which we believe indispensable not only to all fruit-growers but to all lovers of fruit.

—— Mr. F. T. Warner, of Winchester, who for some time has been collecting materials for a Flora of Hampshire, has kindly offered the use of his collections and materials to Mr. Frederick Townsend with the proposal that he should complete the Flora. Mr. Townsend has accepted the offer, and, as much work remains to be done, he invites the assistance of other botanists in furnishing him with lists of plants or in forming these during the present season. The value of lists will be greatly increased if accompanied by specimens, and in all cases exact localities and dates should be given. It is proposed to divide the country into river-basin districts. Letters should be addressed to Shedfield Lodge, Fareham, but parcels to Botley Station, London and South Western Railway. Mr. Townsend will gladly pay postage or carriage of parcels.

—— We have just received from Mr. J. Huntingford Morgan, of 17, Walham Grove, St. John's, Fulham, a remarkable monstrosity, in the shape of a stem of the common Foxglove (Digitalis purpurea), bearing on its summit a huge flower resembling a large-sized rose-coloured Canterbury Bell. It is 2 inches in diameter, and 1¼ inch in depth, and stands nearly erect on the extreme end of the stem. The mouth is very open, and is margined by 13 reflexed rounded lobes. It has twelve stamens and a stout pistil an inch long and ⅛ inch, or more, in diameter. Below it are sixteen flowers of the normal shape and size, in various stages of development. These it resembles in colour both inside and out, but it has entirely lost the characteristic form of the Scrophularineæ, and is in shape perfectly campanulate. Mr. Morgan informs us that the same plant flowered in the same way last year, and that the large flower on the top of the stem was the first to open both this year and last.

—— Prefixed to the fifteenth report of the East Kent Natural History Society, is a brief but pointed address by the President, Dr. Mitchinson, in which he points out the utility and some of the dangers of Provincial Natural History Societies. He refers to one evil which is apt to result from the labours of such societies, an evil which has with justice been animadverted on from various quarters recently, viz., a morbid mania for indiscriminate collecting, which is apt to lead to the extinction of the rarer fauna and flora of the district. No doubt, as Dr. Mitchinson says, collecting is inseparable from the thorough study of botany and zoology; but, as he forcibly remarks, no surer sign exists of a spurious pursuit of either or both of these sciences than when rare plants are torn up, and rare animals made still rarer by that selfish acquisitiveness which passes with so many for a love of science.

—— We are anxious to make an appeal to our readers in behalf of the very distressing and deserving case of the idiot son of the late Mr. Robert Glendinning of Chiswick Nursery, Turnham Green. This poor young man has been for nearly the last twenty years an inmate of the asylum at Redhill, depending solely on his parents for the yearly payment of £60 for his maintenance there. His mother, the last surviving parent, having recently died, and the other members of the family being quite unable to continue the yearly pension in question, he will be turned out helpless upon the world if some immediate steps are not charitably taken in his behalf, in order to place him on the foundation of that Institution. Subscriptions and votes for that purpose will be thankfully received by Mr. Francis Dancer, of Little Sutton, Chiswick, and also by Mrs. Bridges, Rupert House, Chiswick.

THE INDOOR GARDEN.

A FINE SPECIMEN OF RAMONDIA PYRENAICA.

When at Benthall Hall, last year, I was much struck by the beauty of a fine specimen of this plant in full bloom in Mr. Maw's drawing-room. It is unusual to see alpine plants grown into good specimens, and still more so to see them gracing the dwelling-house with their presence. This Pyrenean plant is one of the loveliest of "alpines," and also one of the slowest growers, but, as will be seen by our illustration, it has been grown at Benthall Hall into an abundantly blooming healthy specimen. The engraving is from a photograph taken at Benthall Hall. Mr. Maw finds little difficulty in its culture, except that it is impatient of excessive drought, and that under a hot sun it is liable to turn brown and lose its foliage, which weakens the plant for the succeeding year. It is doing fairly with him in an open rock border, composed of broken stones mixed with equal parts of sand, loam, and peat, and blooms freely in this situation. In a cold frame it is one of the easiest alpines to grow. It likes thorough drainage, and a cool moist situation. It is repotted every year at midsummer; about seven roots are put in a 12-inch pan. The soil used consists of equal parts of loam and sharp sand, with a little peat or leaf-mould. The pans are set in the shady part of a deep pit. To preserve its beauty unimpaired it is necessary to keep the flowers from exposure to the sun, and also to avoid wetting them in watering. Thus managed, flowering pans of Ramondia are lovely objects for at least three weeks, and are well worthy of a place either in the conservatory or sitting-room. W. R.

Ramondia pyrenaica (12 inch pan, 51 expanded flowers).

MANAGEMENT OF GESNERAS.

Gesneras being for the most part tuberous-rooted plants, by judicious management can be had in bloom the whole year round. They are not difficult to cultivate; anyone having a Melon or Cucumber pit, or a stove house, which is better, and a Vinery or a warm greenhouse for summer quarters, can grow them well. They like partial shade and plenty of moisture when growing, both in the atmosphere and at the roots. A suitable soil may be made up of one half turfy loam, the other half being peat, leaf-mould, and well decomposed manure in equal parts; there should also be a liberal supply of silver and sharp river sand, and a good drainage of potshreds or pieces of charcoal. Gesneras should be grown for successional blooming, and as this can be done with a small collection, there should be a series of pottings of the roots. One tuber can be grown in a 48-sized pot, or three or four in a 24-sized pot. Some growers prefer single specimens, which speedily grow into good plants if properly managed, while others prefer large examples, when three or four tubers must be used. The tubers should be started into growth at intervals of from five to six weeks, beginning, say, with the middle of March, and continuing on to early in July, if space can be found for them. The soil should be filled up in the pots to within an inch and a half of the surface, so as to leave room for some top dressing, and it should be gently pressed about the tubers. The pots should then be plunged in a bottom heat of from 70° to 80°, in order to start the tubers into growth, and here they can remain till the shoots are about 4 inches in length, when they may be removed to a warm, dry, and light part of the stove near the glass. There must be no stint of water when required, in fact, Gesneras like plenty of moisture about the roots, so long as there is a free drainage, but they dislike the lodgement of water on their leaves, and, therefore, they should not be syringed over-head, as the leaves become much disfigured through water lodging on them. Each stalk should be tied to a stake, as the plants make a free growth, and require to be tied out so that the finely-marked leaves may be set off to the best advantage. After all, a single specimen in a pot is better than several of irregular growth; besides, a large pot, containing small plants, frequently has a confused appearance. There must be no neglect after the plants have done flowering. Indeed, to keep Gesneras in robust health, they must be well attended to after flowering, for then the bulbs for the following season have to be matured. In order to effect this, they must be carefully tended, giving them occasional waterings with weak liquid manure; but as the foliage begins to decay, less water will be required, and when the growth is finished, water must be entirely withheld. After this, though requiring to be kept dry, they must not be baked, but should be stored away in their pots in a cold dry place until again required. It is a common practice to shake the soil away from them when dry, and to store the bulbs in dry sand; but the best system is to leave them in their pots, and just start them into growth in the old soil before repotting, for by this treatment the bulbs are not so liable to injury, and the plants consequently flower much stronger. The following varieties are all well worth cultivating, viz.:—Barlowii, the leaves of which are bright green, covered with crimson hairs; the flowers are a delicate shade of salmon, slightly spotted on the throat; Chromatella, a kind with dark velvety leaves, and elegant erect spikes of drooping rich yellow flowers; Cinnabarina, a variety with green leaves, and brightened with flame-coloured hairs, the flowers bright and cinnabarred, with a pale throat; Doncklaari, a kind with large, darkly-tinted leaves, and bright vermilion flowers; Exoniensis, a sort with large, rich, dark velvety leaves, covered with minute red hairs, the flowers deep orange-scarlet, with yellow throat; Lindleyana, a sort with rich deep velvety green and red leaves, flowers rosy pink and yellow, freckled with red; Nigrescens, a variety with large dark velvety leaves, dark red flowers, the throat light orange spotted; and Zebrina splendidissima, a kind with leaves handsomely marbled with dark, bright orange scarlet flowers. There are several new continental varieties that are highly spoken of; but the foregoing represent a list of thoroughly good and distinct varieties of acknowledged excellence. R. D.

GOLD AND SILVER FERNS.

Next to the Maidenhair Ferns these rank highest in public estimation. They, however, require more heat, as a rule, than can be afforded them in a greenhouse; a cool stove or intermediate house suits them best, and, where these exist, little skill is required in their management beyond treating them to moderate heat, plenty of water, and shelter from the sun's rays. With the majority of these plants the gold or silver powder on the leaves is easily rubbed off; and, therefore, it is necessary that no water be administered to them through the syringe, or this farina or powder will be washed off. The first of these Ferns on my list is—

Adiantum sulphureum.—This I call the Golden Maidenhair, for although named sulphureum, when properly grown, the farina, which clothes the under-side of the pinnule, is of rich choice gold. Think of that, a Maidenhair Fern having all the delicacy and grace of that old favourite Adiantum cuneatum, and covered on the under-side with a beautiful golden farina; it grows from 6 to 10 inches high, sometimes more. The fronds are three times divided; the pinnules are plain at the edges when not fertile; but when laden with sori, the indusium gives them a peculiar crenate appearance, which considerably enhances their beauty. This plant is usually considered difficult to cultivate, and if placed in stove heat, it always presents a weakly appearance; in a snug corner of the greenhouse it thrives well, although, I must admit, it is not so free in its habit of growth as the majority of the members of this genus.

Adiantum scabrum.—Like the preceding, this is a native of Chili, and, like it, it thrives best in a greenhouse. Both should be potted in good rough fibrous peat, adding to it some silver sand and a little chopped Sphagnum Moss, taking care that the drainage is ample and kept in working order; it does not grow so high as the golden-leaved kind, and the pinnules are somewhat larger; they are bright green, sparingly clothed on both sides with a silvery white farinose powder.

GYMNOGRAMMA.

This genus essentially consists of Gold and Silver Ferns, although some few of its species are not so ornamented. They all require the temperature of a stove; and although I have frequently seen them tried in Wardian Cases, the early days of winter have always closed their career. Some use loam in the soil for these plants; but I have invariably grown them best simply in peat and sand. They like plenty of water at their roots; but they must upon no account be watered over the fronds. During winter they are apt to damp off, and therefore care must be taken that the atmosphere is not too heavily charged with moisture at that season. The following are a few of the most distinct and desirable species and varieties; but almost every batch of seedlings gives rise to varieties, this genus appearing to sport more freely than any other family of exotic Ferns.

G. chrysophylla. — This is a broad-leaved massive-looking plant, the pinnules being very obtuse and deep green on the upper side, but below covered with a thick coating of heavy golden coloured powder. The fronds grow from 10 to 20 inches long, and are arched and spreading. It is a native of Jamaica and various parts of the West Indies.

G. chrysophylla Laucheana. — A garden variety of more vigorous growth than the species, producing longer, narrower, and more erect fronds; their upper side is deep green, below profusely covered with golden farina of a somewhat brighter colour than that on G. chrysophylla. It is not quite so liable to damp off in the winter as the last-named plant.

G. chrysophylla Laucheana gigantea.—This is even more robust in growth than the preceding; it retains, too, more of the massive breadth of pinnæ, so characteristic of the normal form, and it is densely clothed upon the under-side with a deep rich golden yellow powder. Where a large specimen is desired this variety cannot fail to give satisfaction.

G. chrysophylla Parsonsii.—In general appearance this resembles the variety called Laucheana, but it is not so robust in growth, although there seem to be several forms of it, some being taller than others. In addition to its golden appearance, the apex of both pinnæ and frond is ornamented with a beautiful corymbose tassel. It is an exceedingly beautiful garden variety.

G. L'Herminieri.—This is a dwarf-growing plant, and, as far as I can ascertain, an extremely rare one. Its fronds usually grow from 6 to 10 inches in length, and are triangular in outline; soft green on the upper side, the under side being clothed with a light, but intensely bright yellow, powder. It requires stove heat, and is found only, as far as I can ascertain, in Guadaloupe.

G. calomelanos.—This is a robust growing and comparatively hardy species; its fronds are from 12 to 36 inches long; the bare stem or footstalk being jet black; the pinnules are dark green above and silvery white below, through which (when fertile) the black sori protrude. It comes from the West Indies.

G. tartarea.—This is often confounded with the preceding, yet, when seen side by side they are very distinct; the stripes are jet black, whilst the fronds are more massive, with a broader base; they are deep green above, and silvery white beneath. It is a native of tropical America.

G. pulchella.—This is a truly beautiful plant, producing fronds from 1 to 2 feet in length, and from 6 to 12 inches in breadth at the base; the fronds are decompound, the pinnules being cut into very narrow segments, giving the plant an elegant appearance; upper side vivid green, below clothed with a silvery white farinose substance. It is a native of Venezuela.

G. Pearcei.—Extremely elegant as G. pulchella is, on account of the fineness of its segments, it is surpassed by G. Pearcei, which is, however, a somewhat difficult plant to manage. The cool end of a stove seems to suit it best; indeed, if sufficient moisture could be maintained in the greenhouse, I believe it would thrive best in such a temperature. Its fronds are triangular in outline, and four times divided or quadripinnate, and from 10 to 18 inches in height; the pinnæ are cut into segments as fine as the leaves of Fennel, and are vivid green in colour. The under side is dusted with a white powder, but so sparingly is this farina dispersed, that it is not a conspicuous character; the plant itself is, however, so elegant, that it is quite impossible to pass it over in any enumeration of the gems of this genus.

G. decomposita.—This is a garden variety of great beauty, and seems to have a better habit and constitution than G. Pearcei, from which it is supposed to have sprung, and which, at first sight, it resembles. It, however, differs from that plant in its more spreading decompound fronds, and in the rather broader segments into which the pinnæ are divided; indeed, in this respect it would seem to be intermediate with G. pulchella and G. Pearcei. Moreover, the farinose powder with which the under side of the frond and the stipes are dusted, are bright sulphur yellow. It is a very elegant plant, which appears to thrive in a stove temperature.

G. sulphurea.—An elegant dwarf-growing plant, which cannot strictly claim to belong to either of the two sections named at the head of these remarks, inasmuch as the farina which clothes the under sides of the fronds is neither gold nor silver, but pale sulphur yellow. The fronds are usually about 6 inches long, but when well grown, I have had them much longer. They are bipinnate, with the pinnæ somewhat distant; upper side light green, but sulphur yellow below. It requires stove heat, and should be grown near the glass. It is a native of Jamaica.

G. luteo-alba.—This is a handsome plant with bold fronds and large pinnules, which are dark green on the upper side, whilst below they are clothed with both silver and gold powder. It requires the temperature of a stove, and reproduces itself tolerably true from spores.

G. peruviana.—This deserves more general attention than it has hitherto received. It is very handsome when grown into a good specimen; its fronds are broad and spreading—light green above and silvery white beneath. It is a native of Peru, Venezuela, and elsewhere.

G. peruviana argyrophylla.—A very handsome variety, having broad spreading fronds, which are beautifully arched, and which measure upwards of 2 feet in length on well-grown specimens. The pinnules are broad and obtuse, profusely clothed above and below with a white farinose powder. Upon no account must this plant be sprinkled with the syringe, for when the fronds become washed, they present a woe-begone appearance; otherwise, it is one of the most beautiful of the silvery section. It was at first distributed under the name of G. Crossii.

G. Wettenhalliana.—This has every appearance of being a variety of G. pulchella. It does not, however, grow so strongly as that kind, whilst the apex of the frond is surmounted by a dense corymb, and the ends of all the pinnæ are prettily tasseled; the upper side is bright green, profusely powdered with white.

G. Wettenhalliana flava.—A very handsome variety, resembling the preceding in every respect, except in the colour of its farinose coating, which in this case is sulphur yellow, occasionally suffused with bright yellow.

G. trifoliata.—This differs wholly from the other members of the genus, inasmuch as the fronds are tripinnate, the segments being trifoliate and linear. Its fronds vary from 1 to 3 and even 4 feet in height; their upper sides are bright green, while beneath they are clothed with a white farinose substance, or, in some instances, with a bright yellow, and, more rarely, with an admixture of both. It is a very fine plant for the stove Fernery, affording a beautiful contrast with other kinds; but as a pot plant, where space is limited, I do not recommend it. It is a native of Jamaica.

Onychium auratum.—An extremely rare Fern, the fronds of which proceed from a creeping rhizome, and attain a height of from 1 to 2 feet; the pinnules are much divided into linear or cuneiform segments. When sterile, the fronds are bright green, but when fertile, the under-side becomes rich golden yellow. It requires a stove temperature. It is a native of the Malay Islands.

CHEILANTHES.

The numerous members belonging to this genus are scattered over both the tropical and temperate regions of both hemispheres; they are all extremely handsome and well deserving attention. They should be potted in a mixture of peat and sand, with just a dash of sandy loam amongst it, and the drainage must be good, for although the fronds should not be wetted, they enjoy a liberal supply of water at their roots.

C. Borsigiana.—This is really one of the most beautiful little plants in cultivation. It requires cooler treatment than is usually given it, for nearly every one treats it as a stove Fern; I have, however, grown it beautifully in a house with Odontoglossums. The fronds of this species grow from 3 to 6 inches high; they have jet black stems and are triangular in shape and tripartite; the upper side is rich bright green, but that below is clothed with a thick golden yellow farina, with which the black marginal sort forms an elegant contrast. It is a native of Peru.

C. argentea—This forms a lovely companion to that previously named. Its stems are jet black, like polished ebony, and the total height of the plant varies from 3 to 6 inches. Its fronds are triangular in shape, tripartite, and being clothed with a dense coating of white farinose powder, are set off by a continuous marginal line of jet black sori. It should be grown in a snug shady corner of the greenhouse, and not exposed to the sun, as the fronds are apt to curl. It is a native of Siberia, and it has also more recently been found in Japan.

C. farinosa.—A fine and handsome Fern, requiring stove heat. It attains a height of from 1 to 2 feet, and forms a handsome massive-looking specimen. The stems are black, the fronds somewhat triangular in general outline, of a deep green above and beautifully silvery beneath, with which the black marginal sori form a pleasing contrast. It is a native of the East Indies.

C. pulveracea.—This plant is also known by the name of Aleuritopteris mexicana. It resembles the preceding species in general outline, but is more dwarf and compact, and the fronds have not such a massive appearance. It is, however, a very elegant plant, usually attaining a height of from 10 to 18 inches. The fronds are triangular in outline and bipinnatifid, the upper side deep green slightly powdered with white, whilst the under side is thickly coated with silvery white. It should be grown in a cool stove. It is a native of Mexico.

NOTHOCHLÆNA.

The species belonging to this genus are widely distributed over the tropical and temperate regions of the globe. As a genus it is distinguished from Cheilanthes by the absence of a marginal indusium. Some of the species about to be enumerated cannot be classed, strictly speaking, with those which have been described, because they have no farinose powder on either surface, but are indebted for their beauty to the clothing of large scales or silky hairs which adorn the under-sides of their fronds.

N. trichomanoides.—This is a lovely species for a hanging basket. Its fronds, which are pinnate, droop from 12 to 18 inches in length. The pinnæ are roundish or oblong, with crenate edges, dark green on the upper side and white below. This arises from a coating of white stellate scales, over which is scattered some white farinose powder. This variety is prettily margined with black sori. It is a native of Jamaica, and requires stove heat.

N. rufa.—Like the preceding this forms a lovely object when grown in a hanging basket in the stove. Its fronds vary from about 1 to 2 feet in height; they are pinnate, the pinnæ being deeply notched, the upper side light bright green, the lower clothed with pure white woolly scales. This charming plant is a native of Mexico and Peru.

N. nivea.—An elegant dwarf-growing plant, forming tripinnate fronds, some 10 or 15 inches high, the stipes being slender and jet black. The pinnæ are roundish, bright green on the upper side, and clothed with white farinose powder below, through which the naked black sori protrude. It is a compact-growing plant of great beauty, and requires stove heat. It is a native of tropical America.

N. Hookeri.—This is an extremely rare plant, and as far as my experience with it goes, rather smaller in growth than the preceding. It is distinguished by a white farinose powder being distributed over both surfaces, rendering it very effective and distinct. It requires stove heat, and must by no means be watered overhead.

N. flavens.—When this first appeared in collections it was named N. chrysophylla. The plant, however, to which this latter name really belongs, is totally different from it in appearance, and is still a desideratum. N. flavens is a most elegant Fern; its stems are very slender and black as polished ebony; the fronds are tripinnate, growing from 6 to 10 inches high, or perhaps a little more. The pinnules are small and round; the upper side intense bright green, below thickly coated with a bright golden farinose powder, through which (when the fronds are fertile) the jet black naked sori protrude. It is a lovely object for a small stove, and should find a place in every collection of Ferns throughout the country. It is a native of tropical America.

N. lævis.—This is an extremely handsome cool house Fern, of compact habit, and when well grown forming a nice specimen. The fronds attain a height of from 12 to 18 inches, and are pinnate; pinnæ entire, roundish, the upper side deep green, below clothed with long white woolly scales, which, as the fronds attain age, change to a russet brown, the effect of the three colours being very pleasing. It merits a place in every Fernery. It is a native of Mexico.

N. sinuata.—According to some, this is merely a variety of the above, but, whether species or variety, it is so thoroughly distinct, and reproduces itself so truly from spores, that it would be injudicious not to have a different name for it in a cultivated state. Its fronds are from 1 to 2 feet in length, and pinnate; pinnæ broad and deeply lobed at the margins, the upper side deep green, the reverse being thickly coated with long white woolly scales. It requires to be grown in a cool stove. It is a native of Mexico.

N. lanuginosa.—A superb greenhouse species, the fronds of which attain a height of about 6 inches, sometimes a little more; they are bipinnate, divided into small segments, and dark green on the upper surface, the under side being furnished with a dense coating of long silvery-white wool. This is indeed a charming plant, which must not be allowed to get dry, or the fronds will curl completely up, neither should it be watered over-head. It is a native of the Madeira Islands.

N. canariensis.—This is a grand plant for the greenhouse Fernery, but it must not be watered over the fronds. If well cared for, its leaves attain a height of nearly 2 feet. They are ovate lanceolate in shape, and bipinnate; the pinnules being entire and obtuse, the upper side deep green, the under side densely covered with large and long scales, which, however, are neither the colour of gold nor silver, but resemble a baser metal, being of a bright coppery red. It is a native of the Canary Islands.

N. Eckloniana.—An extremely rare plant in cultivation. It is usually coddled up in the stove, but it thrives best in the greenhouse, in a sunny corner. The fronds attain a height of from 6 to 12 inches; they are ovate in shape and tripinnate, the upper side is deep green, but the under side is clothed with a dense covering of white silky-looking hairs and scales; on old fronds these change to light brown. It is a native of South Africa.

N. Marantæ.—This is an exceedingly pretty plant, which seems nearly allied to N. canariensis. It has proved itself to be perfectly hardy in dry, snug crevices of rock-work, and forms a beautiful specimen in the cool Fernery; the fronds are broadly lanceolate, from 6 to 10 inches high, bipinnate; the pinnules linear, and somewhat obtuse, dark green above, but thickly clothed on the under side with large coppery-red, imbricating scales. It is a native of Northern Italy.

Niphobolus bicolor.—The whole of the species belonging to this genus are remarkable for the peculiar and dense coating of stellate scales on the under side of their fronds. This species, however, is the only one which I can include in the present article. The fronds are produced from a creeping rhizome, and seldom exceed a few inches in height; they are simple, entire, and somewhat spathulate in shape, dark green on the upper side, but clothed below with a thick coat of silvery-white stellate scales. It is a distinct and handsome little greenhouse plant, admirably adapted for planting in a small basket in a Wardian case. It is a native of New Zealand.

Cyathea dealbata.—This is a member of an extensive genus of Tree Ferns; indeed, with age, it attains a height of nearly 20 feet, the largest which I have seen in this country being about 12 feet. This fact, however, need by no means deter amateurs from growing it, for if a young seedling plant is obtained it may be grown into a handsome specimen, and it will be many years ere it becomes too large for an ordinary-sized Fernery. The fronds are tripinnate and plume-like, deep green on the upper side and clear silvery white below. It is a magnificent plant, which thrives in a greenhouse temperature, and should be potted in a compost consisting of two parts peat, one part loam, and one of sand. It is a native of New Zealand.—*The Farmer.*

VERONICAS AS DECORATIVE PLANTS.

Veronicas, of which Andersonii and speciosa may be taken as the types, are amongst the most useful of plants either for conservatory decoration or in the shape of small plants for drawing-room stands. I do not say they throw off as much colour as a mass of scarlet zonal Pelargoniums or bright-coloured Chrysanthemums in autumn, but Veronicas, of the Andersonii section, furnish a colour that is comparatively scarce, at least in proportion to other shades. Amongst the best varieties may be named Imperial Blue, Madame Boucharlet, hybrida, and Violacea. The cultivation of Veronicas in pots is so simple and easy, that it is scarcely necessary to enter much into detail respecting it. Cuttings made of the ends of the young shoots strike freely in a hotbed in spring; they should then be potted off and grown on for a time, according to the usual practice with greenhouse soft-wooded plants, pinching in all strong shoots to induce a bushy habit. It is best not to overpot them. Nice plants for autumn blooming may be grown in 6 and 8-inch pots, putting, of course, the strongest plants into the largest pots. They should be potted finally into the sized pots just named by the end of July, and should be plunged in a cool ash-bed in the open air; they should be well watered, and should receive occasionally a soaking of weak liquid manure. They must be housed before frost sets in, *i.e.*, some time early in October; they will then flower freely all through the autumn and early winter months.

If large plants are required the second year in early spring, shorten back all long shoots to put the plants into shape, and after the buds have broken, repot them and grow them on to any size the cultivator wishes. I once had a plant of Andersonii planted out in a conservatory border, a perfect pyramid, more than 8 feet high, and it was rare indeed to see it without flowers at any season of the year; it must, however, occupy a light part of the house and not be over-hung too much with creepers. As regards soil the Veronicas are not at all particular. A rather sandy loam, slightly enriched with thoroughly decomposed manure, suits them well. As a rule, old plants should have rather a richer compost than young ones. Any old plants that are not required for pot culture may be planted out in the border in the open air. And very effective they are in mixed beds or borders, producing freely their long spikes of ever changing flowers till frost sets in in the autumn, when, if it is desired to save them, they may be lifted and potted, and if the operation is carefully performed, they will continue blooming in a cool light house all through the autumn. The creamy white foliage of the variegated variety of Andersonii makes it a very effective foliage bedding-plant. E. Hobday.

Hot-water Pipe Jointing.—I put up a greenhouse three years ago, 32 feet long, and heated it with hot-water pipes, and a tubular boiler, with a 2-inch outlet into 4-inch pipes. All the joints of the pipes split, and I want to know if the small connections at the boiler are the cause of the splitting, or whether it is attributable to bad piping, some of which has cracked in two or three places across the collar and leaks badly.—W. W. [The cause of your pipes splitting at the joints is probably owing to the cement being mixed for wrought instead of for cast iron, and too large a quantity of ammonia being used. Cement for cast iron joints requires but a very small quantity of ammonia, and must not be caulked too tightly.]

Exposing Greenhouse Plants in Summer.—It is a common practice to set greenhouse plants out of doors in summer, the impression being that they are benefited by such treatment; and so they are, provided the pots are not exposed to the sun. The youngest and most tender roots are always next the pot, consequently they are the most liable to injury from any sudden check, occasioned by the sun drawing the moisture out of the pot, and, therefore also out of the soil. It is no uncommon thing, indeed, to see the soil quite shrunk away from the pot, and when water is supplied, it escapes by the outside of the ball, and the soil inside is not wetted in the least. Plants placed under such conditions cannot be expected to succeed. If plants must be turned out of doors, they ought always to be plunged in some porous substance; although, at the same time, it ought to be something that will hold moisture; for instance, cocoa-nut fibre, very rough peat, Moss, or sawdust. I have seen sand used, but it holds the wet too much. The pots should always be placed on slates, or some other material that will prevent worms from entering them. The plants should also be shaded from the sun and protected from heavy rains. By following the above plan, a great deal of time will be saved in watering, and the plants will present a natural and healthy appearance.—A.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Cypripedium barbatum grandiflorum.—Count F. Du Buysson, in a letter to the *Flore des Serres*, states that his experience of this plant has been such as to warrant its cultivation in a cool house with complete success. He has grown it in his Camellia-house, suspended from the roof in a basket containing a compost of heath-soil and charcoal, surfaced with live sphagnum. In the winter the temperature of this house ranged from 39° to 45° Fahr., but, notwithstanding this, and also that the plant was kept rather dry, it continued to push vigorously, and, by Midsummer, showed three fine flowers. When placed in a warm house, it comes into flower about the end of April, and this earlier blooming is, in the Count's opinion, the only advantage which that mode of culture presents.

Bossiæa linophylla.—I have two large specimens of this in a cool conservatory, and they are now, and have been for the last three weeks, completely laden with bloom. They resemble Aotus gracillima both in flower and habit, and are grown in pots in a mixture of rich yellow loam and leaf-soil. Each pot stands near a trellised pillar, to which the shoots are tied to a height of 5ft. or 6ft. and their ends are permitted to hang down in graceful festoons. They need no other care than shifting every one or two years, watering freely whilst they are growing and flowering, and rather sparingly in winter. Under this treatment, and merely protecting them from frost, they annually grow freely and bloom most profusely.—James Forbes, *Perth*.

GARDEN DESIGN.

THE AVENUE GARDENS IN THE REGENT'S PARK.

These, made some years ago by Mr. Nesfield, are now among the most popular and attractive gardens in the public parks of the metropolis, and are, especially at this season, tastefully embellished with flowers and ornamental-leaved plants. There is a good deal to admire in these avenue gardens, considered as such, and from the point of view of design. The whole is so disposed that there is not an overpowering display of colour in any one place. The circular and oval beds north and south of the central gardens are well relieved by the surrounding vegetation, and even in the parts more especially laid out as a flower garden proper, successful attempts are made to relieve the ordinary bedding flowers by more stately and graceful vegetation. The way in which Yucca recurva is used and grows here should be noticed by all interested in flower gardening. In summer Cannas are also very artistically used here, and sometimes we have seen them mixed with the large-growing Dahlias with excellent effect. Let it be observed that the parallelism, by some considered so orthodox in geometrical gardening, is not here carried out. One side does *not* "just reflect the other." The garden is, in fact, a very appropriate one for the position, assuming that the avenue and its surroundings will remain as they are. But it is very likely that this will not be the case. The avenue offers the finest opportunity for improvements of any city site in Europe. The Champs Elysees would prove nothing to what might be formed in the Regent's Park by opening up the avenue as far as Portland Place. When that is done a very much broader and more dignified plan than the present must be adopted. It is much to be regretted that such a noble site as the upper part of the avenue should be in such a mean and unworthy condition as it is at present.

THE GARDEN GUIDE.

SUFFOLK.

COLDHAM HALL.

This fine old mansion stands on an eminence at the outer edge of a small park, and commands splendid views of the surrounding country. The old-world look which the hall has is not removed when one drives round it and enters the small garden that surrounds the back and one side of it. This is in the mixed style—vegetables, flowers, and a little glass being all crowded pretty closely together. Coldham forms a prominent feature for miles in the surrounding landscape, and has played rather an important part in history; it hardly, however, deserves naming in a horticultural point of view.

CHADACRE HALL.

This is a fine modern building, forming in that respect a striking contrast to Coldham. It is placed in a beautifully undulated park of about 100 acres. The river Chad meanders through the bottom of the valley, and advantage has been taken of that streamlet to form several pieces of ornamental water, one of which covers several acres of ground within sight of the mansion. One of the lakes has a prettily winding margin, and contains an island planted with Pampas Grass, Salices, &c. The house is surrounded by a pretty flower garden and some beds of shrubs. There are also a good kitchen garden, extensive shrubberies, some fine Coniferæ, an interesting Fernery formed of rocks, a small flower garden by the river, several good Vineries and plant houses, a nice conservatory containing Orange trees, a north Fernery under glass, greenhouse, &c. A very fine American Aloe flowered in the conservatory here last year, and another almost the same age and size may "show" at any moment. Roses and most shrubs and trees do well in the strong soil of Chadacre. The site is admirably adapted for a series of terrace gardens reaching from the house to the rivulet; as it is, the garden is a medley of beauty, a mixture of all styles, in which the mixed shrubbery and trees and herbaceous plants predominate. A good many Wellingtonias and other choice Coniferæ have been planted in the park and in the belts surrounding it.—Miss Hallifax; gardener, Mr. Foulger. 7½ miles from Sudbury, 4½ miles from Lavenham, 8 miles from Bury St. Edmunds.

BOXTED HALL.

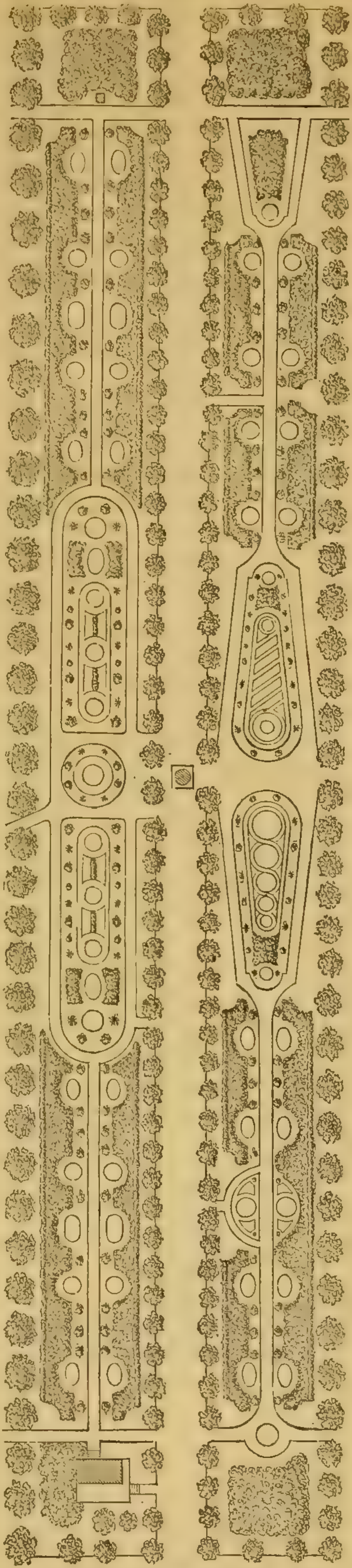
This is a fine old brick mansion, surrounded by a moat and approached by a bridge. In front of the house the park rises abruptly. A river sweeps by at the back of the house and feeds the moat, and on the other side of it are the kitchen gardens and small pleasure grounds. In the shrubberies are a small Fernery and root garden. The house is situated on the water line, with the ground rising on each side of it. The small rivulet just alluded to sweeps away through woods, where it widens out into sundry lakes. These are clothed with Reeds and water Lilies. In addition to these, a magnificent collection of aquatics might readily be grown at Boxted—the position being sheltered and warm. The kitchen garden, though so near the water line, is fruitful, and contains some nice Vineries and several other glass houses. Peaches do well on the walls, which are well furnished. A good many young Coniferæ have been planted of late years about the pleasure grounds and belts surrounding the park. The latter contains about 100 acres, and is well wooded and interesting.—Mrs. Poley; gardener, Mr. H. Foreman. Six miles east of Clare, and 7½ N.N.W. of Sudbury.

KENTWELL HALL.

This is a fine old mansion, surrounded by a moat, and approached from Melford through a dense, dark, lofty avenue of Limes about a mile in length; narrow, but cool and delightfully refreshing in the hottest day of summer. The house has a quaint, old-world look about it, that gives it special interest. The gardens and pleasure grounds disappoint one whose hopes have been excited by the delightful avenue just alluded to. They are small, and fairly kept; but bear no proportion either to the fine avenue of Limes or the large and richly-wooded park which bounds the public road for more than a mile beyond the village of Long Melford.—E. S. Bence, Esq. Thirteen miles from Bury St. Edmunds, three miles north-east of Sudbury.

MELFORD HALL.

This is a fine old Elizabethan mansion, which has evidently been surrounded by a moat at a recent period; two sides of the gardens are still surrounded by water, the moat having been evidently filled in on the other two sides. The boundary wall of the pleasure grounds and kitchen garden is carried along near to the public street, but is separated from it by the water of the moat inside. This wall, and, indeed, several others, have long been famous for the excellence of their Pear trees, and fruit generally. The pleasure grounds around the house are pretty, and well furnished and kept. A nice lawn, groups of flower beds, mixed borders of shrubs and flowers, and pretty walks lead in different directions towards the kitchen garden, which adjoins the pleasure grounds. The kitchen garden here has recently been remodelled and very much improved, and produces excellent crops of fruits and vegetables. On the east side of the garden a small rivulet expands into a lake, full of reeds, &c., and here almost at the water line the Vineries and other glass houses are placed. The position is a cold and a wet one, though pretty good Grapes are usually grown here. The slopes of turf round the hall are very pretty, and the chief windows command fine views of the park, which is large and well wooded, while the pleasure grounds and shrubbery belts, &c., are so disposed as to shut out the village entirely from the windows. The entrance gate from the main street is quite in character with the age and style of the building.—Sir William Parker; gardener, Mr. James Galbraith; three miles from Sudbury, seven miles east of Clare, and thirteen miles east of Bury St. Edmunds.


The Avenue Gardens in Regent's Park.

Protection of Pollen.—Dr. A. Kerner reprints from the "*Proceedings of the Medical and Scientific Society of Innsbrück*" an interesting memoir on this subject. Pollen is of two kinds, powdery and coherent. The former kind is found almost exclusively in those plants whose fertilisation is effected by the agency of the wind. The quantity of pollen is in these cases enormous; the anthers are frequently attached very slightly to the end of elongated filaments, so that the pollen is shaken out of them by the least breath of wind; the flowers grow on the most exposed parts of the plants, frequently appearing before the leaves, so as to give greater facility for the dispersion of the pollen, and are not provided with brightly coloured corolla, powerful scent, or nectar, for the purpose of attracting insects. Plants, on the other hand, whose pollen is coherent, are dependent on insect agency for its dispersion and transport to the stigma. It is therefore absolutely essential in these cases that some means should be provided for its protection from moisture, whether rain or dew, which would immediately destroy its efficacy, until such time as it may be carried away by insects. A variety of contrivances are actually found in nature for effecting this end, which may be classified under the following heads:—1. Protection by portions of the pistil or stamens themselves, as in the petaloid stigmas of Iris. 2. By portions of the calyx and corolla; this occurs in an immense variety of forms. 3. By sheaths, bracts, or foliage-leaves. 4. By periodic movements of the leaves of the perianth, as in the closing of flowers at night or in rainy weather. 5. By curvature of the axis, as in those numerous flowers the opening of which is always turned towards the ground at the period when fertilisation takes place. From the examples adduced Kerner draws the general conclusion that the protection of the pollen against the injurious effect of premature moisture is the more perfect the smaller the number of flowers and of pollen-grains in the individual, the greater their degree of coherence, and the more exclusively the flower is fertilised by insect agency. In those plants where the flowering extends over a great space of time, where the anthers in the same flower vary in the period of their dehiscence to allow the escape of the pollen, and where the number of flowers in an inflorescence is very large, the protection of the pollen against the influence of the weather is reduced to a minimum, as in Umbelliferæ and many species of Cruciferæ and Saxifraga. Finally Kerner draws the conclusion that those plants whose coherent pollen renders insect agency necessary for their fertilisation can only have existed in very recent geological periods; and those new species or varieties must necessarily have the advantage, and tend to become perpetuated, which possess superior advantages, in respect to the climate in which they grow, for the protection of their pollen from all injurious influences. The plants, the remains of which are found in the oldest geological formations, are generally of that class which do not require insect agency for their fertilisation.

THE FLOWER GARDEN.

THE PENTSTEMON.

Of all our hardy garden flowers, there is scarcely one that has been so rapidly and largely improved as the strong, free-blooming Pentstemon. In the hands of hybridisers and cross-breeders, working patiently in the direction of certain definite results, in so far as the processes of nature can be controlled, this favourite hardy flower has come to be associated with a wealth of forms and a flush of hues remarkable in character and extent. A selection of say twenty varieties of Pentstemons, or a bed of seedlings raised from a good strain, will yield colour ranging through many intermediate shades and tints, from pure white to dark red and black purple. Easily managed, and flowering most profusely through many weeks of the summer, the Pentstemon is well adapted for culture by all who are lovers of flowers. Standing singly in the mixed border, or cultivated in beds, it is always an object of considerable interest, while it supplies an abundance of cut flowers when needed. As it is well that anyone setting himself to cultivate the Pentstemon for the first time should start well, I would recommend that a few distinct and leading varieties of known excellence be selected, in order to lay the foundation of the floral superstructure. Such varieties as Albert Tardieu, Arthur M'Hardy, Bons Villageois, Bridesmaid, Candidate, George Sand, James Rothschild, Lady Stanley, Léontine du Louet, Mrs. A. Sterry, Regalia, and Sophie should be obtained; and if these were had from a nursery at once they should be nice, bushy, well-established plants, in large 60 pots. There is nothing like a bed to set forth the beauty of the flowers; for it is by having leading varieties in association that one comes to understand something of the nice differences that distinguish varieties—differences that are not marked by the casual observer, but which are clearly made apparent to the painstaking, observant cultivator. It is in noting such differences, in watching the gradual unfolding of the petals of new varieties, and in appreciating the presence of a new shade of colour, that much of the poetry of the cultivation of flowers consists. A good yellow loam, not too light, enriched by the addition of some manure and leaf-mould, suits the Pentstemon exactly. In a bed composed of such a soil the grower should plant his Pentstemons fully eighteen inches apart each way, so as to afford space for the free growth of the plants. When the plants are turned out of pots a stake should be placed against each, to support the leading shoot, and water should be given, if the weather prove dry, till the plants become established in the ground. After that the task is a very easy one, and a rich harvest of floral effect will be certain to result. Such varieties as it may be deemed well to preserve should be propagated by cuttings taken in August and September from the young growth that springs up round the base of the flowering spike. If these cuttings be put into store-pits, and placed on a cool shady shelf in a greenhouse, or in a cool frame, they will soon root, and in October or November they may be potted off into small 60 pots and wintered in a cold frame or any handy place. The roots can also be divided in the autumn, but by far the best plants come from cuttings. The crowns will continue to flower for two or three years or more; but the flowers become deteriorated, which is an additional reason for propagating annually by means of cuttings. Then a few seedlings should be raised annually. The seed should be taken from the finest and most distinct varieties; and, if the cultivator has a little bottom heat at his service early in the spring, he may postpone sowing his seed till the early days of February; it can then be thinly sown in pots or pans, and, as soon as the plants are large enough to handle, they may be potted off into thumb-pots, and grown on, and gradually hardened off by the end of April. In cases where the cultivator has no bottom heat in reserve, it will be best to sow the seed as soon as ripe in a shallow box, and winter it in a cool frame or greenhouse—the plants to be potted off into thumb-pots as soon after Christmas as possible. The inferior flowers—relatively inferior as compared with some of the best-named varieties grown—should be relegated to the shrubbery border, where they will be very useful as decorative subjects during the summer. The superior varieties can take the place in the bed of any that may be so removed.

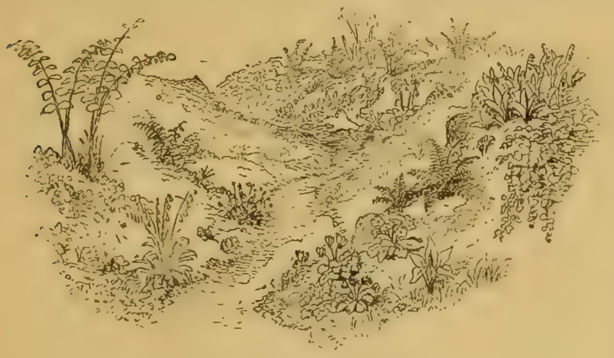
R. D.

LOBELIA PUMILA GRANDIFLORA.

Amongst Lobelias this is a little gem, but it does not come true from seed—at least with me seedlings of it have always proved unreliable. A large stock of it may, however, be worked up from a few plants in spring, as the smallest bits root quickly. Perhaps the most expeditious way of getting up a large stock of it is to pull the little tufts into very small bits, when each little bit will separate readily, with a root or two attached to it, and may be dibbled into boxes, about two inches apart, and the boxes afterwards placed in a close pit; and, as it rapidily establishes itself, if the stock is deficient the same process may be gone through again and again till the requisite number is obtained. In the final planting out in the beds it is bad policy to plant out large plants. It grows so close and tufty if large plants are put out, especially if they have been grown in pots and are at all pot-bound, that the damp will lodge in the hearts of the plants and destroy them. and failures and blanks have arisen from this cause alone. Last year I turned out several thousands of this Lobelia, and at planting time, as the plants were rather larger than desirable, each plant was pulled into three or four pieces, and planted about 5 inches apart, and they did admirably under this treatment. There is also a further disadvantage in planting out large plants of this Lobelia. Every plant in a general way makes roots in proportion to its branches and foliage; and in this case, where the growth is close and dense, and roots do not wander far away, the little spot of soil where each plant stands is soon densely occupied with roots, and the available food consumed. Before the end of the summer there is a lack of nutriment, and the plants, instead of bringing forth a succession of their beautiful azure blue flowers, commence ripening seed, and consequently their beauty declines prematurely. But if small plants are used, and planted rather closer together, the plants thoroughly establish themselves, and the beds will be furnished quite as soon. The whole of the soil is occupied with roots, but not so densely in any one spot; the store of food provided for them is more easily available and the supply lasts longer, and the beauty of the beds is consequently prolonged, a remark which applies also in a greater or less degree to many other plants commonly used for bedding out. It is a great mistake to plant out long straggling plants of Verbenas, Petunias, &c., although some prefer those kinds of plants, because they may perhaps have a flower or two at the points of their long shoots; but smaller, bushy, sturdy plants are the best for lasting effect. There are many combinations in which these dwarf Lobelias might be brought into prominence in every garden. Good really blue bedding plants are scarce in proportion to scarlets and yellows, as there are many yellow-foliaged plants that are now largely used, and notably I may mention the golden Pyrethrum—one of the most useful plants of recent introduction to the modern flower gardener. One of the prettiest combinations in which this Lobelia looks conspicuous is in the form of a ribbon border. The front row may consist of Santolina incana, clipped in close, so as to resemble a neat low stone edging. This plant is better adapted for this purpose than Cerastium tomentosum; its growth is more compact, and less troublesome to keep right. The second and third rows should be Golden Fleece Geraniums and Lobelia pumila grandiflora, planted alternately. In the fourth and fifth rows I place Iresine Lindeni and variegated Geranium, Lady Plymouth, or Flower of Spring. I think I need not fill in the back of the border, as that might be varied according to taste; but the front planted in the way I have stated certainly looked very pretty, as the dwarf tufts of Lobelia set in amongst the golden leaves of the Geranium, which exactly matched it for height, make one of the most pleasing combinations of the kind I have seen. I believe some have found a difficulty in wintering this Lobelia. We wintered our stock last winter in a cool house on a shelf near the glass, but kept comparatively dry, with a free ventilation. But it is of some importance to have the plants for stock taken up and established in September. We always take up a few healthy plants that have been put out for the purpose, pull them to pieces, at the same time cutting off any flowering growth, and pot them into 3-inch pots; and in these pots they are kept till the beginning of March, when the work of their propagation begins. Damp is the chief enemy to guard against, and it can be most easily met in the way I have indicated, by keeping the plants close to the glass, with a free circulation of air at all times when the weather is favourable.—*E. Hobday.*

A SMALL OUTDOOR FERNERY.

There are few small gardens where an opportunity does not exist for the making of a picturesque hardy Fernery. Often, if there is no better place, the rubbish-hole or nook may be turned to good account. If there be nothing else, a space behind the bushes, and between them and the boundary wall, will be found useful. Send a little walk by one of the larger bushes into one of these unseen places; make a tiny winding valley, letting the walk through it emerge at another convenient point. The main point I wish to show by my sketch is, that in this tiny vale a good effect may be obtained without resorting to the masses of brick-rubbish, &c., that one sees in so many gardens. Steep flanks of impossible rock are by no means necessary for Ferns; on the contrary, they do not thrive so well on such structures as in such a place as is here represented. They are, indeed, perfectly at home on lowish banks, if the soil be suitable, and there are enough rocks and stones used to keep the ground moist where needful. A more picturesque effect is secured by a few well-chosen half-buried stones than by the quantities of ill-chosen or ugly ones that are so frequently used. Indeed, if the choice lies between the common style of rocky Fernery and the level ground, it is much better to choose the latter. In the hardy Fernery, it is too much the fashion to plant Ferns alone, as if they only enjoyed such a position. There are many lovely hardy flowers which are wood-haunters and shade-lovers as well as Ferns, and by planting these among the Ferns, a much more interesting result, and a much higher beauty, are produced, than if we only plant Ferns. Such noble plants as Cypripedium spectabile and Trillium grandiflorum thrive better in the moist free soil and the partial shade suited for Ferns than in ordinary borders. Saxifrages, Primroses, Lily of the Valley, Snowflakes, and hardy Cyclamens are a few of many plants that will associate beautifully with Ferns, and that will lend a high degree of interest at all seasons to this miniature garden. A. D.



Peep at a small hardy Fernery.

DELPHINIUM NUDICAULE ELATIUS.

The Delphinium nudicaule has now been sufficiently long before the horticultural world to allow of its value being impartially estimated, and I am, therefore, well content to leave it to stand or fall by its own merits. I am desirous, however, with your permission, of drawing attention to a distinct variety of this plant, which is at present but little if at all known, and which will prove, I think, a great acquisition.

The form first introduced by me was, as is well known, comparatively dwarf in habit, for although a taller variety was raised about the same time, and may have been accidentally distributed when not in bloom, it was for the moment considered inferior to the other, and was consequently kept in hand. Further acquaintance with this variety has led, however, to the conclusion that it fully equals the dwarfer form already distributed in its effectiveness as an ornamental plant, whilst it possesses merits peculiar to itself. The most apparent distinctions consist, doubtless, in its taller virgate stem, pyramidal habit, and greatly elongated panicle of flowers; the former not seldom reaching a height of three feet, of which nearly two are occupied by the inflorescence. There are, however, several other important, if less obvious, differences, of which the most striking is in the character of the tubers. These, in the dwarf form, are so comparatively small that they might almost be covered by a wine-glass, and very rarely exceed two inches in length. But in the plant under consideration, they are often from five to eight inches long, and in some instances this is exceeded, the tubers of each fascicle diverging considerably. It is, I think, a hardier plant, and, what is of even greater importance, of much longer duration—being, in fact, as far as three years' cultivation can enable one to judge, a real perennial, increasing in size and vigour year by year, and capable of increase by division at the root, to a certain extent, when sufficiently strong. This can hardly be said of the dwarfer form, which requires to be frequently renewed by seed, and does not bloom vigorously after the third season. On the other hand, the individual blossoms of Delphinium nudicaule elatius are sometimes slightly smaller than in the dwarf form; but this is compensated for by their much greater number, which ensures a longer period of bloom. There is, indeed, a distinct character about the flowers of each variety, those of the dwarf form being shorter, with a thicker curved spur; those of the latter one having a longer, straighter, and more slender spur, and a more open mouth, with projected petals. It is also noteworthy that elatius produces with me but few seeds; but they are more than twice as large as those of the dwarfer plant. In both varieties there is the same tendency to variation in the forms and tints of the foliage, and in the shades of colour in the flowers. A group of about half a dozen plants produces a really splendid—I may almost say unique—effect, and few things would be finer than a small bed of the elatius, encircled by a ring of the Aquilegia glandulosa, var. jucunda, which blooms at the same time, and is of dwarfer habit than the other forms. The Delphinium has been in bloom from the end of April to the present time, and many of them are still very attractive. The distinctive appellation "elatius" has been adopted at the suggestion of Dr. Asa Gray, who, as long ago as 1840, in the supplement to Volume I. of "Flora of North America," recognised the existence of two distinct forms of this plant.

Before quitting the subject, as the description given of D. nudicaule elatius may suggest to some readers the possibility of its being identical with the D. cardinale (Hooker), I am able to state with confidence that the two plants are quite distinct, though closely related. It is now about 20 years since I first cultivated the D. cardinale, when introduced by Messrs. Veitch, but speedily lost it, and my recollections are necessarily somewhat imperfect. I have, however, recently raised a few plants, one of which is about to flower. The character of the foliage alone would suffice to distinguish it from either of the forms of D. nudicaule, the leaves being very deeply divided, with very narrow distant segments, especially those near the summit. I believe that when the plant expands its blossoms, ample differences will be apparent, but, however that may be, there is one unmistakeable and very interesting distinction between the two plants, in the manner in which the seeds germinate. In both forms of D. nudicaule, the two cotyledons are invariably connate, so that the plumule appears to emerge laterally from the soil. In D. cardinale the cotyledons are perfectly distinct, and the plumule rises in the ordinary way from their midst.

Ipswich. W. Thompson.

THE DRACÆNA AS A BEDDING PLANT.

After four years' trial of Dracæna grandis, terminalis, and Cooperii out of doors during the summer months, in one of the most unfavourable parts of Yorkshire, I think we are justified in recommending these three varieties as a very desirable addition to the sub-tropical group. We have had them out from June to October, and find that they not only retain their foliage and colour well, but even grow a little; though we wish it to be understood that they ought to be grown to the desired size before they are put out. Anyone who has seen those varieties of the Dracæna knows how ornamental they are, and can conceive what a gorgeous group they make when a number of plants are massed together. Of course it is not everyone who can get up and keep stock of such plants in quantity sufficient to fill whole beds, though this might be done in plenty of places without difficulty; but it is not at all a difficult matter to get up as many plants as will lend character to a bed, planted perhaps with such things as Cannas, Phormiums, or Palms—plants which are rather dull by themselves, but when lighted up with Dracænas, if only round the margin of the bed, the improvement and effect are telling. I am aware that the Dracæna has been used for some years in the south as a sub-tropical bedder; but I am recommending it now for more general use in any part of England or Scotland, where the climate is ordinarily favourable, and I dare say a few hints as to the most expeditious way of getting up a stock of plants will not be unacceptable. Those who have an old plant or two have the means of getting into a stock at once, and they should lose no time in doing so. A common but not an expeditious way of propagating it is to make cuttings of the tops; the next best way is to split the stem up, chop it into pieces, and plant them like Potato sets. Many of these will make buds, and before long plants, and every piece should be utilised to help to add to the stock; but the surest way of multiplying them is to cut up those tubercular protuberances that form themselves on the roots of the Dracæna, particularly on old plants. If these are cut into pieces about a quarter of an inch long, taking care always to leave as much of the outer bark on each piece as possible, and laid in a pot among fine light soil, just covered deep enough to prevent their being washed bare in watering, and plunged in a bottom heat of 90°, you will very soon have about as many nice plants as you had sets. Once the plants are fairly up and rooted, they must be potted singly in 4-inch or 5-inch pots, in a compost of loam and leaf-mould, and grown on in a moist stove temperature, where they can have a good light, so as to bring the colours of the foliage well out. By midsummer, autumn-struck plants will be a good size, and after being hardened a bit in a cold house they may be plunged out of doors, where they are intended to be for the summer. If tall, conspicuous plants are desired, they should be grown on for two years or more; and if a stock is propagated every year, there will always be a good supply for all purposes. We find the Dracæna to be just about as hardy as the Canna, having had them planted out together. J. S.

Daisies for Edgings.—No one knows how useful all coloured Daisies are for the above purpose, unless they have tried their effect, and having done so myself, I can recommend them with confidence; and to those who like permanent edgings, they will be found invaluable. How well a bed edged with pink Daisies shows up beside one done with Viola lutea, or the white against Viola cornuta, and, again, the deep scarlet next to white Arabis. Besides blending well with other colours, the Daisy has many other important advantages—it is very hardy, will stand well any kind of weather, is easily propagated by dividing the roots in autumn, and can be bought for a very small sum. It comes in flower very early in the spring, and remains so nearly all through the summer, so that it is useful for the spring as well as the summer bedding. Its dwarf and compact habit of growth makes it very useful where there is spring bedding done in the carpet style. I had two small circular beds myself this spring, in which Daisies were employed, one being a cross of scarlet on a groundwork of golden Pyrethrum, and the other in the same form, only pink Daisies and variegated Arabis had been used. These little plants are not particular as to soil, provided it is not very dry, so if they have to be planted in that kind of ground during the summer months, they must be kept well watered should the season prove a dry one. There is a variegated (golden) kind, with scarlet flowers, which is effective when in or out of bloom, but this is not so common nor so cheap as the others above mentioned.—*A. H., in "Gardener's Record."*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Hedychium Gardnerianum.—This fine old plant, often grown in stoves and warm houses, grows vigorously and flowers well planted out in a greenhouse which is merely protected from frost.—R.

Floral Wall Copings.—In reference to your correspondent's article on this subject (see p. 433), I beg to say that I made, and exhibited at the International Exhibition of 1871, among other objects in terra cotta, what I called "Alpine coping for garden walls." It was made to hold soil enough for such plants, and, as a coping, it was cheaper than common stone. — Jas. Pulham, *Broxbourne.*

Oriental Poppy.—Among herbaceous perennials now in or coming into blossom, none surpass in size of flower, brilliancy of colour, and freedom of bloom, the Oriental Poppy (Papaver orientale). It makes a capital border plant. There are several varieties of it, the best being Papaver bracteatum, which is very distinct, and has larger flowers, of a deep crimson colour, than those of the other kinds. Fine plants of P. bracteatum may now be seen at Kew, and likewise several other forms of this species.

Wanner's Harebell (Campanula Wanneri).—Of all the dwarf species of Harebell, this is, so far as I have seen, one of the best. Its flowers are tubular, about 1¼ inch long, and of a fine purplish blue colour. They are, in fact, large for the size of the plant, which grows only a few inches in height. It forms a charming rock plant, associated with such dwarf Campanulas as pulla, pusilla, cæspitosa, &c., and, when more common, will doubtless often find a place in the front of mixed borders. It is now in flower on the rockwork at Kew.—T. S.

Viola umbrosa (Fries.).—This is a pretty dwarf species, found in the north-eastern part of the Russian Government of Smolensko, only in half-shady positions, on the banks of streams. It grows about 2 inches high, and commences to bloom in the open air in May, the flowers being of a delicate lilac colour, shaded with rose. When grown in a cool house, it will flower in February and March. It does not appear to be a good kind for forcing, as the delicate tints of the flowers are much impaired by the process; but it succeeds perfectly in ordinary soil in a half-shady, moist position, in which its charming little flowers attain their greatest beauty.

THE GARDENS OF ENGLAND.

BLENHEIM.

The palace of Blenheim and the magnificent park were the munificent gift of the English nation to John Churchill, first Duke of Marlborough, in recognition of a series of almost unparalleled victories, by which the reputation of the British arms was carried to the highest pitch. The gift was worthy of the nation. It comprised nearly the whole of the royal domain of Woodstock—that ancient regal seat which was the scene of the half-legendary story of "Fair Rosamond." The palace of Woodstock was pulled down, regardless of its antiquarian interest, in 1714, when a new edifice arose, in another part of the park, destined for the residence of the great and successful soldier.

On entering the domain, the spectator is at once struck by the breadth and grandeur of the laying out of the park, which was the work of the often-decried Brown, one of the earliest of our professional landscape planters. He is distinguished from other Browns as "capability" Brown, from his being quick at seeing, and speaking of, the "capabilities" of a place which he was called upon to improve, or of a site upon which he was employed to create a landscape. He most certainly did perceive the capabilities of the ancient domain of Woodstock, which he improved into the park of Blenheim with masterly grandeur of effect; and it must be admitted that many of his successors, though his severest critics, were also his imitators. On approaching the palace, a small portion of the great lake is perceived, lying amid slopes dotted with noble detached trees, backed by great undulating woods, the water view being terminated by a highly decorative bridge of very grand effect, notwithstanding its rich detail. Advancing towards the main façade of the palace, the extensive left flank of the building is first seen, the long architectural lines being gracefully interrupted by the spreading branches of one or two nobly grown trees. Further on, the view over the park becomes more extensive, some grand old centenarian Cedars contrasting strikingly with the lighter foliage of the deciduous trees on the far-reaching green slopes, with great pictorial effect.

When the principal front of the palace is reached, the effect of the architecture is exceedingly impressive; there is a general broadness of treatment about it; a skilful management of those bold projections, which afford variety of light and shade; and there is also such excellent design in what architects call the sky-line, as at once proclaims the structure one of the architectural masterpieces of the reign of "Good Queen Anne." Turning round, and looking in the opposite direction, is seen the spacious approach to the bridge over the narrow part of the lake; and, on the rising ground beyond, which attains a considerable elevation, rises the column surmounted by the statue of the first duke. From this spot, in fact, a semi-panoramic view is spread out before the spectator, from which glimpses of the larger lake are obtained between the trunks of finely-grown trees, while beyond, on all sides, are gracefully undulating slopes, and noble detached trees, and massive and far-extending woods, such as are rarely surpassed even in the most perfect examples of our English park scenery.

Before penetrating the more distant recesses of the woods, and avenues, and wildernesses of Blenheim Park, I resolved to enter the house—or rather palace, as it is called—and ascertain whether the views from the principal windows had been as duly considered as the views from the approaches—whether architect and landscape-maker had acted, in respect of window views, with persistent independence of each other, or had worked well and thoughtfully together. In creating a new place, the planting, close about the mansion, so as to soften and vary the architectural effects; and the arrangement of the principal windows, so that they may command the finest and most appropriate outlooks, I look upon to be among the most important points to study; and one in which the architect and the horticulturist should always work together. On entering the inner hall, neither the painted dome, nor rich architectural accessories, nor the exquisite portrait of the third Duchess, by Romney, were what I desired to examine; and, in spite of my attention being earnestly called to them by the "groom of the

VIEW IN THE GROUNDS AT BLENHEIM.

chambers," I hastened at once to the principal window, and was not disappointed with the view. There were the tower of Blaydon Church, nestling picturesquely among the ancient woods, and, nearer, some grand sweeps of turf, enriched with finely-grown trees, especially two Cedars of Lebanon. From the windows of the three drawing-rooms the views are quiet and pleasing: there are grand distant woods, with green slopes, and fine trees in front, including a grove of several Cedars. As "the groom of the chambers" would not move forward till he had most fully described the tapestries which decorate these three rooms, I was compelled to hear his account of them, even to "the bitter end." They are, in fact, very well-woven tapestries, as tapestries; but, as to being accurate representations of the respective battles which are supposed to be thereon depicted, they are truly ridiculous performances. There is no attempt whatever to show, however vaguely, the disposition of an army, or the nature of the respective sites. One after another these compositions consist of a mechanically fine cluster of trees, beneath which a group, or two groups, or three groups of noble cavaliers are seen capering about, in the full-blown military costume of the period, on prancing steeds—white, grey, chestnut, black, and brown. Among these dashing gentlemen, "le bel Anglais"—the gallant Churchill himself—is always the most conspicuous figure; while a little smoke in the background represents the contending armies. Thus the composition, called the "Battle of Malplaquet," would serve equally well for that of Oudenarde; and Oudenarde would, on the same principle of battle-painting, be as perfectly satisfactory if called the battle of Blenheim.

At last we passed on to the library, and "the groom of the chambers" having no remarks to make upon the books, I had all the time to my windows and my views. From the first window I was much pleased by a group of Cedars, and some well-selected Thujas on a steep slope, casting their shadows of strongly-contrasted forms over some of the most velvety and beautifully shaven turf I have ever seen. A similar view, equally pleasing, but less striking, was commanded by the second window. The left division of the great bow commanded a venerable old Cedar, rigid and angular in its aged and hoary magnificence; and below it was a lovely slope, planted with young Coniferæ of various kinds. From the right division of the bow the spectator looks over a geometrical flower garden, of poorish design, but forming a pleasing variety to the surrounding irregularity. Beyond are deciduous trees, whose foliage of every shade of vivid green mingles pleasingly with the more uniformly dark hues of Pines and other Conifers—between the trunks of which gleam, like lights, narrow and fitful glimpses of the upper lake. This portion of the view from the right hand section of the great bow forms a truly noble home landscape. A door on the opposite side of the library opens to a fine colonnade, commanding a view over the principal lakes and woods, which display from that point the grandeur and yet simplicity of their design with great effect. From the windows of the suite of rooms containing the pictures, many of them undoubted works of the "great masters," and several of them masterpieces, the outlooks are always pleasing, though seldom striking; but the end windows of the last room, which command another aspect, reveal to the spectator many pleasant features of a true home landscape. In the foreground is a very gracefully designed geometric flower garden, the intricate interweaving of the lines of which is worthy of the delicate pencil of a mediæval illuminator—and beyond is a noble avenue, the soft shades of which terminate against a background of massive tufted woods; the avenue itself being flanked by detached Cedars, ancient Elms, and other trees.

It was now high time to take a rapid survey of the park, but just as I was hurrying through the great gateway, a storm of thunder and lightning, accompanied by torrents of rain, suddenly burst forth; however, having gone down from London expressly to stroll through Blenheim Park, and study the horticultural devices by which the celebrated scenery had been produced, I felt that thunder and lightning, with an hour of drenching rain, ought not to prevent me carrying out my project; and it didn't. I borrowed an umbrella of the porter and sallied forth. My first object was to find out whether any portion of the old Royal Park of Woodstock, or any of its ancient trees remained; so following the direction indicated to me as that leading to the spot where the old palace once stood, I thought that situation the most likely one in the neighbourhood of which to find relics of the past. I think I was not mistaken. After diverging from a short double row of Elms, to which I was tempted by a glimpse of what I thought was the ruin of an aged Oak, I arrived at last in a portion of the park which I fancy (only fancy) may have existed in the times of Eleanor and Rosamond. The long rich Grass is studded with noble centenarian Oaks, and also by others, with vast hollow trunks, bark-stripped and grey with hoary age, the ancestors of the youthful centenarians. These venerable tree ruins, outstretching their gaunt, bare arms, seem to be trying to reach back towards the times of their youth. Some of them have still a green spray here and there on trunk or limb, like the sparse hairs of a very aged man; but as a rule their naked trunks and great gnarled limbs are bare, gray spectres of their former stately being. I fancied that Rosamond and her royal lover might have wandered beneath their shade, furtively watched by the jealous Eleanor in the summer evenings of that far-off time. I wonder that artists have never found out this spot and peopled it on canvas in some such fashion as that I have suggested.

Returning by another path I took a fresh start from the front of the principal façade, and hastened on to the bridge to study the formation and planning of the great upper lake. I once had an impression, the result of a visit many years ago, that its extent was not so skilfully concealed as it might have been; but my present view of the results obtained by the original planning quite removed that hasty and erroneous impression. By means of planted banks, jutting far out into the water, and other well known, but seldom skilfully applied devices, the extent appeared immense, and no termination of the vast silvery sheet was visible. It is certainly a grand and successful example of artificial lake-making, to which the trees, with the venerable grandeur they have now attained, impart the fullest effect, and their quaint irregularities give such bold touches of pure nature as totally conceal all traces of artificial creation. Crossing the bridge, and descending a path crisp with cones and Beech husks, I found myself at Rosamond's Well, now a small square pond palisaded round—but once, no doubt, a small spring, or well, as springs were formerly called,—such as holy well, or healing well, or Our Lady's well,—quite a different thing from the deep artificial sinkings which we now call a well; while we should call Rosamond's well a "spring." Above the "well" the rising ground is studded with some of the finest and oldest Cedars in the park, from between and about which, looking over the lake, a magnificently picturesque view of the palace is obtained. Above this lies some wild ground, Fern-clothed and rugged, and shaded by deciduous trees of various kinds and ages, which appears to be a favourite haunt of the deer. There is a distant view of the palace obtained from this spot, which, seen by moonlight, and with the nightingale's song to furnish woodland music, must be very charming. It is this view, by moonlight, which is represented in our annexed illustration of Blenheim Palace and Park.

Noel Humphreys.

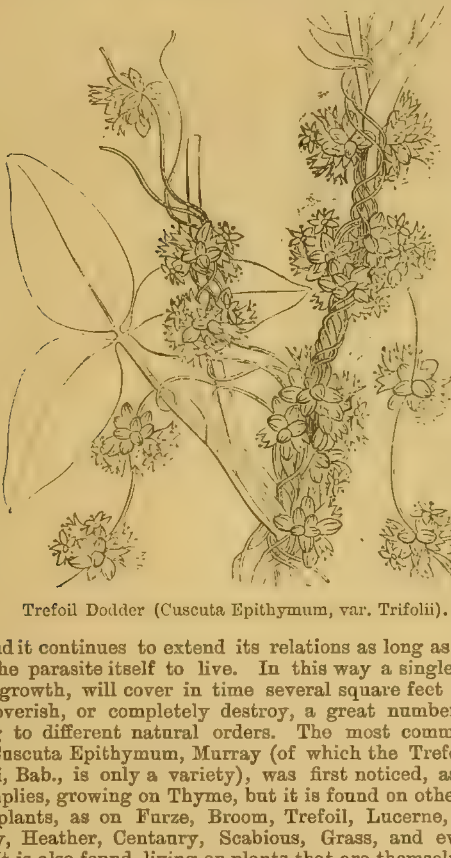
THE DODDERS.

BY W. CARRUTHERS, F.R.S.

The Dodders form a group of plants which are very closely related to the Bind-weeds (Convolvulaceæ), yet are separated from them by many important characters. Some fifty species are recorded from all parts of the globe, and though they can be specifically distinguished, no peculiarities exist among them of sufficient importance to justify the establishment of generic groups. All are included in the one genus Cuscuta established by Linnæus. They are all annual parasitic herbs, with thread-like stems, entirely leafless, or having the leaves represented by a few scattered minute scales. The small reddish flowers are united into little round balls. Each flower produces four small seeds about the size of a grain of mustard. The mass of the seed consists of a fleshy albumen in which is spirally coiled a thread-shaped embryo. Gaertner first showed that, while these plants agreed in every way with other dicotyledons, they differed in the fundamental character expressed in the name, in having, as is supposed, only a single cotyledon in the embryo plant, but in reality this supposed cotyledon is only the axis or stem of the plant, without any leaf appendages whatever. As all the Dodders are annual, and they have no roots protected in the ground, the winter completely kills all the plants of each season's growth. The ripe seeds, however, supply the means in them, as in other annuals, of reproducing with the new season the destroyed plants of the last—for each perfect seed contains a minute bud, capable, though separated from the parent plant, of maintaining a dormant existence, and, under suitable conditions, of starting into independent active life. Each seed encloses, either in the tissues of the embryo plant or surrounding it, a quantity of food sufficient to support the young plant until its organs are developed so far as to obtain its own food.

In Cuscuta, the albumen in which the embryo is enclosed supplies it with food enough to enable it to lay hold of the stem or branch from which it will draw its nourishment, if that is within reach. It is unable to maintain its life after the stock of food laid up by the parent is exhausted, so that it dies if it does not succeed in attaching itself to a living plant. Mr. Buckman has shown that, when sown with seeds of suitable plants, the ordinary internodal lengthening of the supporting stem lifts with it the young parasite from the earth. When, on the other hand, it attaches itself to grown plants, all connection with the earth is speedily cut off, and the lower extremity of the filiform stem is left suspended from the nourishing plant.

When the Dodder touches the supporting plant, it twines round the stem, and from the inner surface of the coil throws out a series of suckers, by which it secures a living connection with the stem. Through these suckers it withdraws the elaborated juices from the plant for its own use, and, from its rapid growth, it soon impoverishes, and ultimately kills, the supporting plant. It has already, however, thrown out branches by which it has seized hold of new plants, and it continues to extend its relations as long as the season permits the parasite itself to live. In this way a single plant, by its rapid growth, will cover in time several square feet of ground, and impoverish, or completely destroy, a great number of plants belonging to different natural orders. The most common British species, Cuscuta Epithymum, Murray (of which the Trefoil Dodder, C. Trifolii, Bab., is only a variety), was first noticed, as its name almost implies, growing on Thyme, but it is found on other and very different plants, as on Furze, Broom, Trefoil, Lucerne, Rock-rose, Cranberry, Heather, Centaury, Scabious, Grass, and even on the Brake. It is also found living on plants that are themselves partial parasites, like Eye-bright, Yellow-rattle, and bastard Toad-flax.



Trefoil Dodder (Cuscuta Epithymum, var. Trifolii).

The structure of the Dodders, and the nature of the relation between them and the plants on which they are parasite, have been investigated by Mirbel, Unger, and especially by Chatin. Being complete parasites they are without the food-producing or food-procuring parts of ordinary plants, viz., roots and leaves. Nor have they any of the green colouring matter (chlorophyll) which plays an important part, in elaborating the food of vegetables, yet not an essential part, as is shown by the experiments of Saussure and De Candolle on Atriplex hortensis rubra, and Ulva purpurea. The minute scales and flower bracts, which are the only representatives of the leaves, are, as well as the stem, completely destitute of stomates. The stem consists of a cellular pith surrounded by a woody structure, which differs, however, from the wood bundles of other dicotyledonous plants in being destitute of ducts, of medullary rays, and of liber. There is, consequently, no true bark; its place is occupied by a cellular layer surrounding the wood cylinder, the cells of which contain a red liquid, and are more or less charged with starch granules. The suckers are developed from the stem. The flattened portion is derived from the external layer of cells. Through this is pushed a cone composed of the cellular pith and woody structures of the axis. These penetrate the stem of the supporting plant. It is not easy to understand how these delicate cell structures penetrate the firm fibro-vascular tissues while they are in active life. The same problem presents itself in investigating the growth of all the phænogamous parasitic plants—of the Mistletoe on the Oak or Apple, as well as the Dodder on Clover.

In penetrating the stem the tissues of the attacked plant are not injured; they are only pushed aside by the advancing cone, and the cells of the parasite are placed in such close relationship to those of the supporting plant that the organised juices pass freely from one to the other, entering the Dodder just as they would pass into a branch of the plant itself. The relation of parasitic fungi to the plants on which they grow is very different from what occurs in the Dodders and the other higher parasites. The small roots, or mycelium of the fungi, penetrate the walls of the cells, and live upon the tissues themselves, or on the starch or other contents of the cells. The result is, consequently, the disorganisation and destruction of the plants attacked by the fungus. The higher parasites, on the other hand, only withdraw the organised juices. This operation is without any real injury to the supporting plant, if the proportion of the juice withdrawn by the parasite is small in relation to what exists in the whole plant, as is generally the case with the Mistletoe on the Apple: or it is fatal to the supporting plant, as in the case of the Dodder on Trefoil, where the rapid growth of a large parasite withdraws all the prepared food, and kills the plant by exhaustion. The enormous mass of the Dodder also destroys the Clover which it covers, by smothering it in the same way that any other heavy and dense covering would. Of the many remarkable problems suggested by the study of the Dodders none is more strange than the physiological inquiry as to how, without any appliances for obtaining food from the air or the soil, and entirely dependent on the prepared juices of the plants on which they live, they nevertheless contain in their tissues starch, resin, and different acrid substances which are not found in the nourishing plants, and, on the other hand, they want some of the chemical elements which abound in these plants. And, still further, how a single plant of Dodder collecting its food from plants so different as Clover, Heather, Thyme, and Grass can convert the diverse juices of these various plants into products which are completely unlike any found in each or all of them.

Considerable alarm has at times prevailed in various districts when the Clover or Flax has been extensively preyed upon by this dangerous parasite. The appearance was of course due to the use of seed (generally foreign) containing Dodder. There is really no excuse for seedsmen permitting Dodder to accompany Clover seed, inasmuch as the small size of the Dodder seed (being only half the size of Clover) permits it to be easily separated by the mechanical process of sifting. When, however, the cultivator has the misfortune to discover Dodder on his farm, he should use the utmost diligence to secure its destruction. No attempt at tearing the Dodder to pieces will destroy it; indeed, each separate piece that remains connected with the living plant will maintain its independent existence. Permitting the Dodder to die on the field is also utterly worthless for the purpose of securing its extirpation, for the seeds remain, and when the spring returns they will germinate. The only efficient cure is to burn completely the whole vegetation of the diseased spot, together with the surface of the soil on which the seeds may already have fallen.

Flax and Clover crops are not the only ones that may be injured by Dodder. The Thyme-Dodder, of which the Clover-Dodder is, as I have said, but a variety, has been found on plants belonging to the same genus with the Potato; and my attention was drawn last autumn, by Mr. Brandreth Gibbs, to crops of Swedish Turnips attacked by this plague. The field was near Dunstable, on the Brandreth estate. The farmer, Mr. Scroggs, informed me that, two years before, the field had produced a good crop of Trefoil, which was here and there affected by Dodder. Mr. Scroggs cut down the Clover, leaving the diseased plants to die on the ground, and then ploughed them into the soil. No indication of the parasite was detected in the Wheat crop which followed the Clover, but the plough having brought the seed again to the surface, it germinated after lying a year dormant, and attacked the crop of Turnips then growing on the field. The suckers of the Dodder had penetrated principally the fleshy stalk and midrib of the leaves, but not a few of the Turnips themselves were also attacked on the upper surface.

THE FRUIT GARDEN.

VINES IN ROCK BORDERS.

Vines seem to acquire wonderful luxuriance in the native rock which we have hereabouts. I was induced last July twelvemonths to break up 18 inches of rock in front of our Vine pit, breaking it to about the size of road metal. I then planted some young Vines, about the size of Wheat straws, in this rock, with just a little soil to keep it together, and was fortunate enough to ripen a few eyes inside the pit. I allowed one on each Vine to break, and succeeded in obtaining 30 feet of good strong wood last summer, which is only intended to bear a bunch or two, to prove some of our new Vines. Such seems to be the value of this rock that I think of taking out one light width of our present Vine border and substituting some of the rock, for I am of opinion that we have a mine of Vine border materials which only want to be dug up and planted to supersede all our chopping and mixing by weight and measure. The growth this season is very favourable. Five of the young Vines are bearing fruit, a few bunches of which have been left, just to prove the kinds. The Royal Ascot and Golden Champion are colouring and very healthy, the others are later, and I have no doubt will prove satisfactory. As has been already stated, they had at first only 18 inches wide of the rock broken up for them to grow in, but in order to give them a good start I broke up 3 feet more in width and 18 inches deep of the rock, and, in so doing, found it occupied with very fine thread-like roots, although so solid as to be only capable of being broken up with a pickaxe. This unexpected disturbance of course gave the plants a slight check, but I believe they are all right again. The original Vine, already alluded to, is still doing well; it consists of one shoot 120 feet long, and contains 132 bunches in various stages of growth, from some just ripe and perfectly black, to others not long thinned out. The Vine has never had any soil or manure given it since it was planted; it is a truly wonderful Vine. I ought to say that I have removed part of a Vine border, taken up one Vine, lifted the roots of another, and replaced the border with broken rock. In this I intend to plant young Vines. The lifted roots were laid in the new-made rock border, and have suffered no check. The Vines, in fact, are bearing a good crop of late Grapes. F. Joynes.

MUSCAT OF ALEXANDRIA VINES.

Seven years ago I planted strong canes of this Muscat, and during the first year they were not allowed to bear. The second year a few bunches were taken off them, and the third and fourth years they were heavily cropped, each Vine carrying about twenty-four bunches; the fifth year they showed fewer bunches, the sixth year fewer still, and the present year about the same. They are grown on the long rod system, and the wood breaks more weakly each year; the foliage is healthy, but late in falling off. The border is wholly inside, walled all round, and when made the original soil was removed to the depth of 2 feet 6 inches, to a bed of clay of great depth; upon the clay was placed 6 inches of cinders and 2 feet of rich compost, such as is usually employed for Vines; each Vine was allowed 6 feet by 5 feet of border; two years since the inside wall was removed, and 2 feet added to the border; it was then found that the roots had gone down the side of the wall into the clay, that they were the thickness of the thumb, and were traced to the depth of 3 feet in the clay, scarcely any fibres being found on them, and on the new piece of border being examined this spring, it was found that there were no new roots in it. I am, therefore, of opinion, 1st. That no border, and especially if limited to a small space and on clay, ought to be made without a paved bottom, through which no Vine root can get. 2nd. As the Vines are expected to improve for the next twenty or thirty years, they ought to have been allowed at least ten times the size of border which was given them. 3rd. I propose to take up the Vines at the proper season, carefully preserve the fibres, cut off all tap roots, and replant them in an enlarged border properly made. T. D.

[Your Muscat of Alexandria Vines appear to have been judiciously cropped for their age, and their failure after the fifth and sixth years' growth is no doubt partly owing to the confined inside border and the roots getting into the clay subsoil. The remedy proposed is in my opinion the best to try under the circumstances, namely, to take up the Vines at the proper season, carefully preserving all the roots with fibres, and to replant them in an enlarged border properly made. In 1864 I replanted seventeen Muscat Vines, twelve years old, in a large Vinery in the new gardens here. The situation was damp, with a strong red clay subsoil; but it was firmly concreted, and air drains were made with 4-inch tiles, laid every 4 feet across the border on the top of the concrete. All the spaces between them were filled up with broken bricks, clinkers, and lime rubbish, so as to cover the tops of the tiles. These Vines bore a full crop the second year after they were replanted, and have borne large crops ever since. I should advise your correspondent to replant his Vines inside the house; but when he enlarges the border, to make the largest portion of it in the outside, so as to give the roots full liberty to run out. The newly-replanted Vines will be much benefited by having their roots covered on the outside border with some fermenting materials before they begin to break in the spring. —William Tillery, *Welbeck.*]

Beurre Dubuisson Pear.—Respecting this Pear, which attracted so much attention last season in Belgium, we read the following remarks in the *Bulletin d'Arboriculture*:—"We consider the Beurré Dubuisson the most valuable acquisition of the present generation, as it equals the finest October Pears in quality, and is in perfect condition in February and March—a time when thoroughly melting fruits are not to be had. It has, moreover, another invaluable quality, viz., that of keeping ripe in a fruit-room, without suffering any change, for four months, commencing from the beginning of December." The following description of this Pear is given by M. Du Mortier, in the *Pomone Tournaisienne*:—"Fruit very large, oblong, slightly indented, truncate, and ribbed at the base, somewhat attenuated towards the top. Stalk short, thick, oblique, not much sunk in the flesh. Skin yellow, dotted and spotted with russet, sometimes slightly coloured on the side next the sun. Flesh fine-grained, buttery, sweet, slightly aromatic, and very juicy. Quality unsurpassed." The Beurré Dubuisson is finely figured in the *Bulletin d'Arboriculture* for September 1872, where its aspect in the coloured plate fully supports all that has been written in its favour.

A New Late Peach.—Under the name of Pèche Belle de Saint-Geslin, a new Peach is described, in the last number of the *Revue Horticole*, as the latest-ripening kind known to French cultivators. The stock from which it sprung was discovered some years since growing amongst the ruins of the old tower of St. Geslin, near Richelieu (Indre-et-Loire). The discoverer (M. Joutron) finding that it fruited much later than any of the other kinds he possessed, continued to propagate it. The quality of the fruit is excellent, the flesh being very melting and sweet, with a slightly perfumed flavour. It is also of large size and handsome appearance. Its chief merit, however, is that it ripens as late as the beginning of November, somewhat later than the Salway Peach. The tree is described as a vigorous grower, with long stout branches covered with bark of a uniform blood-red colour. Leaves long, oval-lance shaped, very finely toothed. Flowers like those of Grosse Mignonne.

The Training of Fruit Trees.—The following, which we extract from a foreign journal, though not new, may prove a useful hint to beginners engaged in training fruit trees: "In 1870 M. Chevalier, of Montreuil, planted a young tree of the Grosse Mignonne Hâtive Peach, which he destined for training in the U form. For this purpose two nearly opposite buds were allowed to remain near the base of the stem, in order to form the two main branches of the U. One of these buds, during the first year, produced a shoot more than 3 feet long; while the opposite bud made only a very short and feeble shoot. With the view of equalising the growth of the two shoots, M. Chevalier cut off the half of each of the leaves on the stronger shoot, leaving those on the weaker one untouched. The result was that the vigour of the stronger shoot was so checked, while the other continued to push, that the growth and size of both are now perfectly equalised and symmetrical." It is necessary to add that this cutting of the leaves must be performed carefully and by degrees, otherwise the shoot so operated upon may be very seriously injured.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

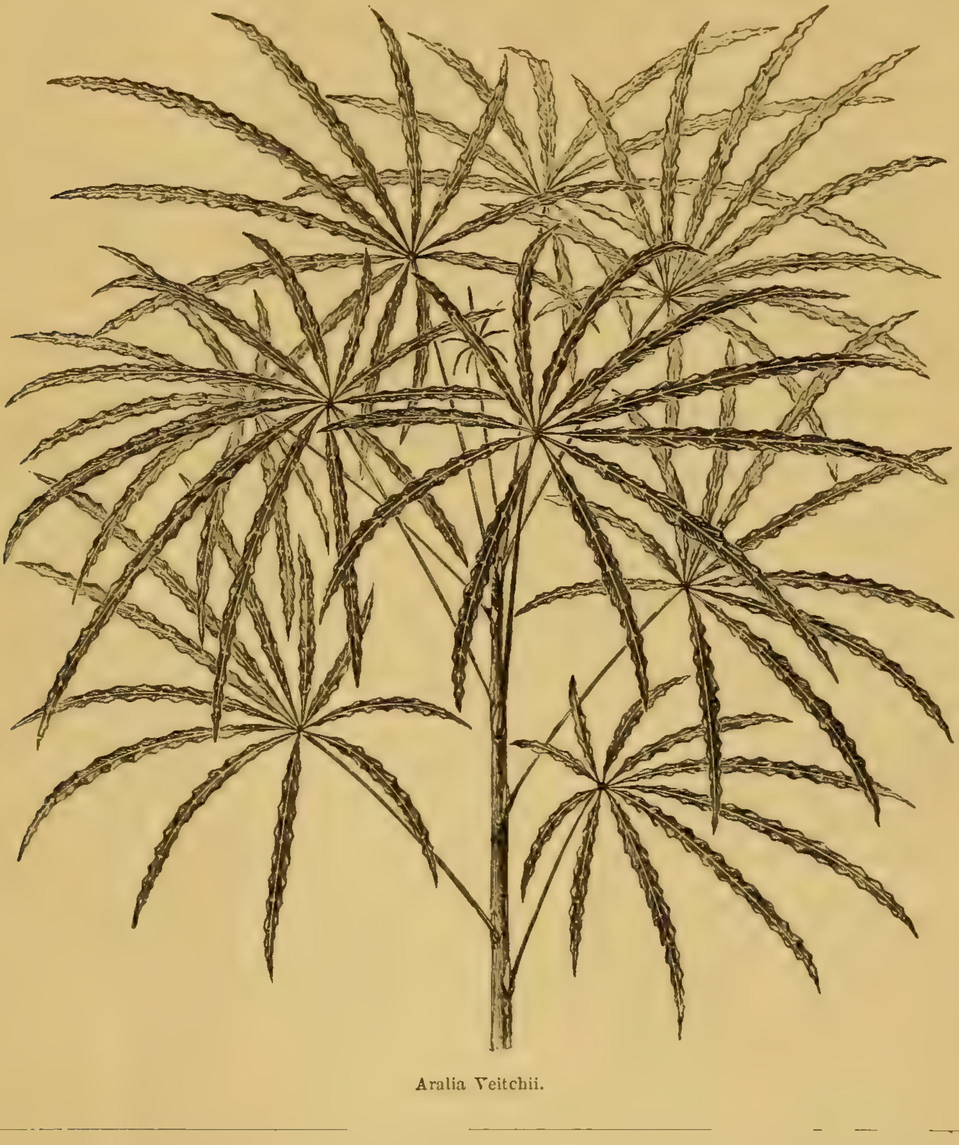
Mulching Strawberries.—Strawberries and black and red Currants appear to be bearing exceptionally fine crops this season. I hear from Kent, that they are literally loaded with fruit. Strawberries, if not already done, should be mulched at once; mulching has the double advantage of keeping the fruit clean and the roots moist and cool.—R. Gilbert, *Burghley*.

Potash for Peach Trees.—At the meeting of the Cincinnati Horticultural Society, the President alluded to potash as a most excellent fertiliser for Peach trees. He had a Peach orchard of about twenty-five acres; the soil was poor, and manured with potash only. He dissolved it in water so that the lye would be so weak that a Potato put in it would not quite come to the surface, and then applied two quarts of this liquid close around each trunk every spring. His crop had been in 1867, 1,500 bushels; in 1868, 600 bushels; in 1869, 1,400 bushels; in 1870, 350 bushels; and last year, 1,800 bushels.—*Cincinnati Farmer.*

THE GARDEN IN THE HOUSE.

ARALIA VEITCHII.

As a plant for dinner-table decoration, this lovely Aralia is hardly surpassed, even by the finest and most graceful of Palms. It is a slender-growing plant, producing an abundance of handsome digitate leaves, having from nine to twelve filiform leaflets, the edges of which are beautifully undulated. The leaves are of a dark metallic-green colour above, and of a dark reddish hue underneath. This fine species was introduced into this country from New Caledonia, a few years ago, by Messrs. Veitch and Sons, of Chelsea. It has received the highest awards that could be given to a new plant, both in this country and also on the Continent. It thrives best in a moist-stove temperature; but, in summer, it does well in an intermediate house. It should be grown in a compost of peat and loam in about equal proportions, with the addition of some silver sand. Young plants of it are best for house decoration, as this Aralia is not a very rapid grower there is little fear of its getting too large for that purpose; and as it preserves its leaves for a long time, there is not much danger of its becoming naked stemmed.



Aralia Veitchii.

A BOUQUET OF FLOWERS FROM CAPE BULBS.

I HAVE lying on my table just now some floral gems culled from Cape bulbous plants, and in passing them through my hands I have thought that some of your readers might like to know something about them. The first that comes to hand is Babiana grandis, the colour of which is a rich crimson magenta, suffused with lake; in the sun the glow is intense. Next comes Tritonia Brilliant, the beautiful luminous orange-scarlet flowers of which are exceedingly effective in vases. Then follows Antholyza fulgens, the beautiful rich scarlet towering spike of which is set in the centre of the bouquet. I will now take the exceptional coloured flowers of Ixia viridiflora, the sea-green of which sets off the crimson centre to advantage. Surrounding the whole, I have placed Ixia Lady Slade, the loveliest of the roses; Crateroides, the sweetest of the cerises; Bucephalus, representing magenta; and Vulcan at the head of the crimsons. Of the yellows, Merveilleuse is the largest, the lightest, and the most beautiful; Titus the darkest and the smallest. Then of yellows which, when closed, show the crimson most, I would name Plautus, Constance, Conqueror, and Golden Drop. Those with the crimson least conspicuous consist of Aurantia major, Triumph, and

La Majestueuse. Amongst whites and primroses, there are Virgilius, a gem, almost pure white with a crimson centre; Scilla, white, with a black centre, the outside petals being lined with crimson; Pallas, very much in the same way; Gem and Luna, differing but slightly from those just named; Aspasius, still white, with a dark centre, but when closed shaded with red; Model, fawn-coloured, with dark centre and outside petals tinged with rose; Giant and Clarus, very much alike, red and white when open, parti-coloured when closed. My bouquet contains many other varieties, but I have given you the names of my leading kinds; and now a word about their culture. A piece of ground lying well to the sun, protected, for instance, by a wall, greenhouse, or other structure, is the best position for Ixias, Sparaxis, Tritonias, Babianas, and similar Cape bulbs. The ground should be well drained, the compost at least two-thirds good loam, and the roots planted from 4 to 6 inches deep. During severe weather, hoop the beds over, and protect them with mats, or, in the absence of mats, with litter. The chief danger lies in the plants starting early into growth, and when that is the case, care should be taken to keep the foliage free from injury. If treated as has just been directed, abundance of these beautiful flowers may be cut during the latter part of May and the month of June for furnishing vases, if required; and if not, no group of plants will furnish the cultivator with more interest and variety. As pot plants they are most charming, and easily managed. I have grown them in a great variety of ways, and planted them at various times. This season my largest planting was in January, and I observe that the Sparaxis are just coming into flower. I am, therefore, looking forward shortly to a grand display. Irid.

Watering Window Plants.—"Water," it is generally said, "should be given in moderately small quantities, and supplied frequently." Few people, however, who have had any experience, would sanction such a system, knowing too well what would be the consequences; and I believe if the causes of failure in so many instances, where plants are cultivated in windows, were minutely investigated, the dribbling system of watering would be found to be the principal cause. I am fully convinced that a plant ought not to be watered until it is in a fit condition to receive a liberal supply of that element, having previously secured a good drainage in order that all superabundant water may be quickly carried off. I do confidently assert that those who are constantly dribbling a moderately small quantity of water upon their plants will not have them in a flourishing condition for any length of time. This must be obvious to all, for it is quite evident that the moderately small quantity of water frequently given would keep the surface of the soil moist, while at the same time, from the effects of good drainage, which is essential to the well-being of all plants in an artificial state, all the lower roots would perish for want of water, and the result would be, that the plant would, sooner or later, become sickly, and eventually die. —A. B.

A Greenhouse of Artificial Flowers.—Forty-one of the leading artificial flower-makers of Paris have combined to send to the Vienna Exhibition a specimen of their united skill, which will prove incontestably that the capital of France still reigns supreme in the matter of artificial flower manufacture. This patriotic contribution consists of a complete greenhouse, filled with flowers of every description, perfectly imitated. In it are Hyacinths, the illusion of which are the fibres thrown out by the roots; bouquets, in which one sees the flower freshly-blown, and that which has been in existence but two hours; wild flowers, the soft gray down of which seems ready to float away. The whole work is a marvel of artistic skill and unexampled patience.

NOTES AND QUESTIONS ON THE GARDEN IN THE HOUSE.

Viburnum plicatum.—This hardy flowering plant does well in a window balcony, in which it produces its white balls of flowers in abundance. I find good turfy loam and thoroughly decayed manure or leaf-soil to be a good compost for it. If in a plant case, it should have plenty of water and a position near the glass when it begins to grow.—Geo. Douglas.

Mother of Thousands.—I noticed that this common window plant held a prominent, and even effective, place in the table decorations exhibited last month at Alexandra Palace. In the topmost tier of one of the March stands were inserted, amongst flowers and Fern fronds, one or two pieces of this Saxifrage, in such a manner as to permit the runners bearing their tiny offspring to hang down gracefully over the edge, thus giving the vase a well-furnished, yet light and elegant, appearance.—Edith Somerville.

THE HOUSEHOLD.

SORREL.

This vegetable, if not nutritious, is wholesome, and, when properly treated, particularly nice. The peculiar acid taste of Sorrel is very agreeable, and in my opinion comes next after the exquisite sub-acid flavour of not over-ripe Tomatoes. Sorrel, however, in this country, is as little known as Laver out of Ireland or Cornwall; and, although it grows wild in our lanes, it is not easily obtainable at ordinary greengrocers. Then there is the stubborn prejudice of all true Britons in matters of food, which makes them look upon all things acid, other than the contents of the pickle jar, as highly unwholesome. I have my doubts whether the same individual who will contentedly feed off mackerel or salmon soused in wood vinegar could ever be induced to eat a plateful of *soupe à l'oseille*. There are a number of soups in the composition of which Sorrel enters in greater or lesser quantity, and these I will first describe, premising that, to whatever use Sorrel is destined, it cannot be too carefully picked and washed clean. In some instances the stalks must be rejected, and the leafy part of each leaf alone used. The following are various forms of the homely *soupe à l'oseille*:—

1. Take a pound of Sorrel, pick the stalk from each leaf, shred the leaves coarsely, and put them into a saucepan with an ounce of butter, keep stirring for some minutes; then add about a quart of stock, free from fat, and let the whole simmer till the Sorrel is done; add pepper and salt if necessary; then beat up the yolks of two eggs with a little of the stock, and stir them (off the fire) into the soup, which is then poured over small slices of stale bread and served.

2. Treat the Sorrel as above, and with the stock add two or three Potatoes cut in small dice; finish as in the preceding recipe, and serve with or without the bread.

Both the above formulas can be carried out *au maigre* by using water instead of stock; and a more elaborate kind of *soupe à l'oseille*, either *au maigre* or *au gras*, can be produced as follows:—Wash, pick, and shred a pound of Sorrel, put it into a saucepan with a head of Lettuce shred finely, a handful of Chervil, and 2 ozs. of butter; stir on the fire for about ten minutes, then add a quart of stock (or water), pepper and salt to taste, and a dust of powdered nutmeg; let the whole simmer half an hour, then stir in, off the fire, the yolks of two eggs beaten up with a gill of cream. Pour the soup over some diminutive slices of stale bread (neither toasted nor fried), and add a piece of butter as big as a Walnut. This nearly approaches the well-known *Bonne femme* soup, which can be made thus:—Cut up a good-sized Onion into very thin slices, place these in a saucepan with a good allowance of butter. Take care not to let the Onion get brown, and when it is half done throw in two or three handfuls of Sorrel, a Lettuce, and a small quantity of Chervil, all finely cut; add pepper, salt, a little nutmeg, and keep stirring until the vegetables are nearly done. Then add a tablespoonful of pounded loaf sugar and half a cupful of stock or broth, free from fat, and not coloured. Let the mixture reduce nearly to a glaze, pour in about a quart of stock or broth as above, and, after the soup has given a boil, it can be put aside until the time of serving. Meanwhile prepare about a dozen and a half very thin slices of bread, about 1 inch wide and 2 inches long, taking care that they have crust along one of their long sides, and dry these thoroughly in the oven. When it is time to send up the soup, first remove the superfluous fat from it, then set it to boil, and, when it boils, stir into it (off the fire) the yolks of two or three eggs beaten up with a gill of cream or milk. Pour the soup over the slices of bread, and serve when the bread has had time to soak. Sorrel shredded more or less coarsely is an agreeable addition to every variety of spring soup, *au gras*, in clear *consommé*, or *au maigre*, with a *liaison* of yolks of eggs and cream. It can also be used in conjunction with farinaceous substances, as in the following two soups.

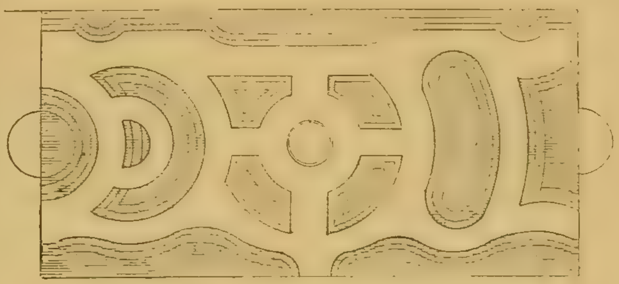
1. Boil some rice in water; when half done drain off all the water, and finish cooking the rice in some clear stock. Then add, according to taste, more or less Sorrel, finely shred, boiled in salted water till done, and strained.

2. Make a very thin porridge by strewing a small quantity of semolina in some well flavoured stock, and stirring on the fire till it is well done; then add Sorrel prepared as in the foregoing recipe.

In both recipes salt should be added if necessary, and the stock used should be free from fat and well flavoured, by which I do not mean strongly, but judiciously flavoured—according to art. Another variety of Sorrel soup is that of *purée*, the common form of which is as follows: Boil the Sorrel in salted water; when thoroughly done, drain all the water off, and pass the Sorrel through a hair sieve; and I may mention, in passing, that the majority of cooks have a strong objection to using hair sieves for passing Sorrel, Spinach, and vegetables generally, on the plea that it is harder work and takes a longer time than when a wire sieve is used. Wire sieves are made of copper or of tinned wire. The use of the former I strongly deprecate, not only for substances containing acids apt to act on the copper, but for any purpose whatever, for it is next to impossible to prevent some oxidation taking place; and, although the quantity of verdigris which may thus be introduced into food may not be sufficient to kill or even to cause any disturbance in the system, yet food is the best with no traces of oxide of copper in it. The tinned wire sieves are unquestionably preferable, and if some rust does find its way into the food it is rather beneficial than otherwise. Still for Sorrel, or any substance containing strong acids, I prefer a hair sieve; and I may add that there are hair sieves to be had quite as coarse as any wire sieves. But returning to the *purée* of Sorrel, the next step is to melt a piece of butter in a saucepan, amalgamate with it a tablespoonful of flour, and when the flour is cooked to stir in the Sorrel pulp; then add a sufficient quantity of plain stock to make the soup of the desired consistency, season with pepper and salt, and pour it over small dice of bread fried in butter. The above formula may be varied in many ways—by the addition of a little sugar, a small quantity of grated nutmeg, by stirring into the *purée*, off the fire, *liaison* of yolks of eggs beaten with a small quantity of cream or not as the case may be. Plainly boiled rice may be served in the *purée* instead of fried bread. Then again the *purée* may be compounded in the manner following: Fry a sliced onion in butter, add some flour, then the Sorrel boiled, strained and chopped, pepper, salt, a little nutmeg, a little sugar, and a small quantity of stock; stir the whole well on the fire, then pass through a hair sieve; dilute the result with more stock, and finish with a *liaison* as before, serving over fried dice of bread. Other vegetables, such as Spinach, Lettuce, Chervil, and Parsley, can be used in combination with Sorrel to compound the above *purée*. When the *purée* is intended to be used as a "vegetable" or as a garnish to an *entrée*, the process is exactly the same, with the single exception that less stock and more flour are used, so as to give the preparation a greater consistency. If intended to garnish a fricandeau, some of the liquor in which the veal has been braised should be used instead of stock to moisten the *purée*. Veal cutlets, pork chops, escalopes of rabbit, and every form of white meat can be served with a *purée* of Sorrel. Boiled fillets of sole may be in worse company than with such a *purée*; and poached or fried eggs go very well with it also. A well-made plain omelet laid on a bed of Sorrel is an *entremet* not to be despised; and lastly, the *purée* may be garnished with "quarters" of hard boiled eggs and triangular sippets of bread fried in butter. The young leaves of Sorrel dipped in butter two at a time and fried are one of the numerous varieties of the genus fritter. To make this particular kind, however, the operator must be well skilled in the art of frying; for in cookery—as, indeed, in everything else—I need not say the simpler the operation the more difficult it is to carry it out creditably. —*Queen*.

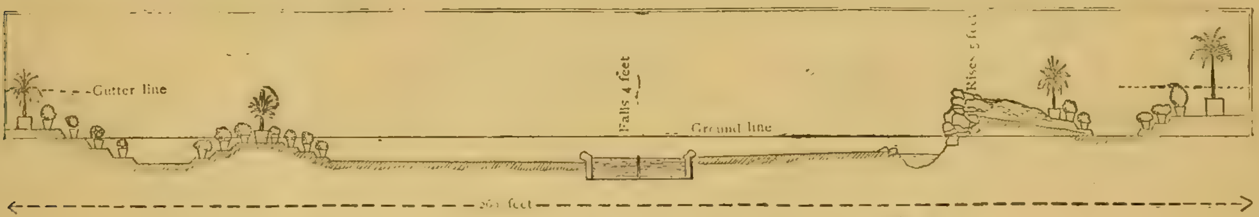
ROYAL HORTICULTURAL SOCIETY'S SHOW AT BATH.

The ground on which this exhibition is to be held is situated in the Royal Victoria Park, Bath, in the midst of one of the most favoured spots for picturesque beauty in the West of England; it occupies an area of about 13 acres, and is on the western side of the city, about a quarter of a mile from the new station of the Midland Railway Company, and three quarters of a mile from that of the Great Western. It is the intention of both these companies to run excursion trains from the principal towns on their lines of route during the show. What is called the Model Garden, of which we give a plan and sections, has been tastefully laid out by Mr. Eyles, and will, when furnished with plants, have a fine effect. The society may, indeed, look forward with every confidence that the show which is to open on Tuesday next will be one of the most attractive and successful of its meetings yet held in the provinces.

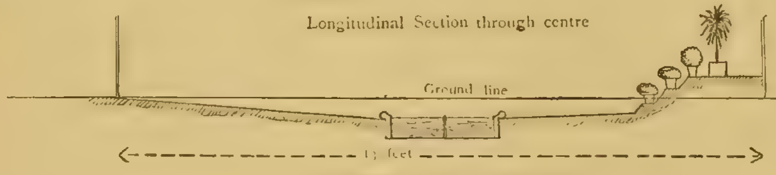


Plan of the show ground of the Royal Horticultural Society at Bath.

The chief display of Palms, Tree Ferns, and the more important stove and greenhouse plants, will be arranged in a tent 260 feet long by 120 feet wide, and will present the appearance of a tropical garden. Large tents will also be filled with other varieties of plants, fruits, cut flowers and vegetables, and some will be appropriated to the display of table decorations, and specimens exhibited by cottagers and artisans, and the exhibition of articles in the industrial department will, we understand, be on a very extensive scale—and will include, besides horticultural buildings, wirework, rustic arbours, and bridges, heating apparatus, &c. In the principal tent a quantity of perforated stones obtained from Claverton Down has been artistically grouped, so as to form a grotto and cascade. This ornamental erection has been tastefully decorated with Ferns. The park itself is well laid out, varied in surface, and contains an excellent selection of trees and shrubs all well named. Indeed, of the various show grounds used by the Royal Horticultural Society, this seems to us the most convenient and beautiful. The spot known as the dell—a picturesque hollow, full of good specimen trees and shrubs—is quite a picture in its way. This, indeed, and several other spots in the park, are prettier scenes, in a landscape-gardening point of view, than we often find in private gardens of repute.



Longitudinal Section through centre



Transverse Section through centre

The ceremony of opening the exhibition will probably devolve on the Earl of Cork, Lord Lieutenant of the county, supported by the Mayor of Bath, the High Sheriff of Somersetshire, and other gentlemen of distinction. We understand that the Mayor of Bath intends to invite the Council of the Society and its officers to a grand banquet after the inaugural ceremony.

THE KITCHEN GARDEN.

CULTIVATION OF THE MUSHROOM.

BY JAMES BARNES.

Where I lived some fifty years ago there was a Mushroom house, heated by a flue and peat fire. The shelves were placed one above another for the reception of the material for the beds; cow-dung was collected from the fields, stable droppings were shaken out, turned and dried in open sheds, the beds were made, rammed tight, and spawned in due course; the whole was then covered with nice friable loam to the depth of 2 inches or thereabouts. This system was called "Oldacre's method." At that time it was considered a great feat among horticulturists to grow Mushrooms successfully; and I well recollect earnestly watching for them to spring up, which they did, very nicely, in about six weeks. Three years later I entered a large London market garden, now all built over. There, besides extensive Pine, Grape, Cucumber, and general forcing and plant culture, Mushrooms were largely grown, on pretty much the same principle as that just mentioned, only, instead of shelves, the beds were made on the floor against the back walls of sheds, along which flues ran, or in beds ridged in the centre, according to convenience. In winter a nice moist heat was maintained by placing hot stable manure inside, and often turning it over. In summer beds were similarly made in an underground cellar, and out of doors ridge beds. Indeed, we were at that time considered first-class Mushroom cultivators, of which there were very few about London, so that a good price was always obtained for our Mushrooms. My employer would never sell them under 1s. per pottle (that is, a Strawberry pottle) for the buttons, and a small flat punnet for the open or flat Mushrooms. At that time Mushrooms paid better made into ketchup, than when sold at 1s. a pottle. I have known them sold in quantities at that time from 2s. 6d. to 7s. 6d. per pottle, and when very scarce, even at half a guinea a pottle. I next undertook the management of a much more extensive market garden, on the Surrey side of London, where Pines, Grapes, Cucumbers, Melons, salads, vegetables, &c., were forced very early and extensively; Mushrooms had, however, not then been attempted at that place. I soon set about growing them, however, on a very extensive scale, and also the manufacture of spawn. I had now so simplified the Oldacre system that anyone could grow Mushrooms who could get a little stable dung and some fresh earth; good loamy holding or stiff soil certainly is best.

How I first got this knowledge was as follows: I was removing an old worn-out bed in dry weather, in the summer time, when I observed how the spawn had run into the earth, as well as into the muck or litter that had been wasted and trodden about near the beds. I at once asked myself, why take so much pains and trouble in preparing and drying the dung to make Mushroom beds? So I set about making fresh beds directly with dung from the stables, shaking out only a small portion of the longest dry litter, and intermixing with it a quantity of such earth as was at hand, ramming and treading it down as firmly as possible to the desired size and depth or height. In this way I at once secured the full properties of the manure and soil, and a genial heat, without a chance of burning or becoming too moist, or in the least exhausting the properties of the material through fermentation. Such a composition, in a genial situation, will oftentimes actually breed or produce spawn without using artificial spawn. Beds made on this principle always produce Mushrooms in abundance, of the finest and heaviest kind, and continue to bear or produce them for many months. After the beds have been in bearing for some time and are beginning to get dry, we always water with tepid clear manure-water, made or formed only from sheep, deer, or cow-dung; no chimney soot or lime is used for this purpose. It is astonishing the length of time a Mushroom bed may be kept in full bearing by this treatment. For the last thirty years I have made my beds entirely on the floor in sheds; I wheel in the stable dung fresh, and mix with it a sufficient quantity of soil, incorporating all well together, treading and ramming it firmly down, letting it remain five or six days; then shaking it up and intermixing it well together and if it is found fermenting too strongly, I add more soil' treading and ramming down as before. Very soon afterwards it is ready to spawn and case with soil; when, a very gentle genial heat and moisture being secured, these properties are afterwards fully maintained. In this way much trouble and time are saved in collecting cow-dung, and in getting the stable droppings saved, as was wont to be done. Besides in the frequent turnings to which the dung used to be subjected its best properties were allowed to escape. In winter we make our beds, when finished and cased, about 16 or 18 inches thick, and in summer, about 6 inches less, thus securing Mushrooms every day in the year.

ARTICHOKES.

The Globe, or French Artichoke (Cynara Scolymus), is a valuable and wholesome vegetable, which can be obtained in good perfection for at least six months in succession. Commencing with the old-established plants that have been well protected through the winter, these will afford the first supply in May and June; and, for the next two months, crowns may be had from a planting of strong suckers made in March; and, for the end of summer and autumn, from a successional planting made in May. Another very good plan is to cut back, close to the earth's surface, a few old plants early in spring, and occasionally afterwards. These will produce a thicket of shoots, which should be early thinned by pulling and cutting the weakest, and allowing only a portion of the strongest suckers to remain. These will produce, in succession, nice young heads. The Artichoke, if cut when about half grown, possesses a very pleasant flavour, and is a very delicate vegetable, almost the whole of which is eatable; but, if the heads are allowed to attain to their full growth, or nearly so, they are not so fine in flavour, and have lost most of their tenderness, so that only the base of each scale and the base of the head are fit to eat; whereas the whole of the head of a young plant may be eaten and enjoyed. The Artichoke will grow very luxuriantly and rank in rich boggy land in summer, and is not at all a bad-looking plant in large borders and wild gardens, with its noble foliage of a kind of blueish green, and with its large heads of flowers of a Borage-like blue colour; but it will not stand our winter in wet quarters. As a kitchen-garden plant, it will grow on any kind of soil, if well manured, trenched, and pulverised; but no soil suits it better than a good, open, sandy, rich loam, trenched, and well manured. The plant is in its best perfection at the second and third year after planting. Plants are to be seen in some places standing in a half-starved state for years, producing nasty little, hard, bitter heads. This is why, to a great extent, no doubt, the Globe Artichoke is not so generally appreciated as it should be. Artichokes are best for table when cut at about half-growth, when they have attained their delicate, bitter-like flavour. Boil them quickly in clean water, with a good portion of salt added to it; serve hot, applying butter, pepper, and salt, according to taste. They may, however, be served with white sauce, and in other delicate ways, as may please individual fancy. In a clear open piece of good soil, well manured, deeply trenched up into rough ridges to get well pulverised and sweetened by atmospheric influences, free from trees and hedges, planted methodically—the first batch in March, and for succession another planting in May—and afterwards kept thoroughly clean and an open free surface maintained by often hoeing and scarifying the ground about them, a dozen stools will produce as many fine rich heads as double the quantity will do by the old-fashioned crowding neglectful system of planting. To plant properly, make choice in early spring of good strong suckers, taken off the stools carefully with a sharp strong paddle-trowel or Asparagus knife, with some root to them or heel of the old stool, to hold them in the ground; plant them singly 2 feet apart, in rows at least 4 feet apart, or in groups of three in triangles, at 4 feet apart at least in the row. Protect them as soon as planted against the sun and cutting winds, with the Seakale pots, at this season just out of use, or with evergreen boughs, or some other convenient protecting material. Those thus early planted will produce nice free crisp heads the same summer and autumn. If the stems also are cut close to the ground as soon as the heads are cut, new suckers will soon appear, and if duly thinned will produce a late crop; thus, by treating the Artichoke systematically with a little method and forethought, a good supply of nice heads may be obtained in succession from May till October. This plan is much better than that of growing a large piece of Artichokes, and allowing them to come in in June and July, at one and the same time, by the cwt., when Peas, Cauliflowers, French Beans, Asparagus, Spinach, and a host of others of our most useful vegetables are in full season; and when the spring and summer vegetables are getting more scarce there are no Artichokes to succeed them. To say the least, it is a lack of forethought not to have them in full succession all the summer, without having a great glut of them all at once and when only a few are required. B.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—After the flower and subtropical gardens have been furnished, there will probably remain many odds and ends that will prove useful for the decoration of herbaceous and shrubbery borders, and which should now be planted in such positions in them as will set them off to most advantage. Peg down Petunias, Verbenas, old and "leggy" Pelargoniums, Tropæolums, &c., so as to render them as effective as possible. Bracken or small Beech pegs are excellent for this purpose. Have a stock of Lobelias in reserve to take the place of inferior kinds, which often appear where seedlings are used. Edgings of Cerastium should be gone over weekly, and all flowers cut off with a pair of shears; flowering shoots should likewise be picked off all plants of the variegated Polemonium cæruleum, golden Feverfew, variegated Spiræa Ulmaria, and other plants grown only for the beauty of their leaves. Affix stakes to Dahlias, which, with the exception of the purple Zelinda and a few others of that class, require such support. A good supply of reserve plants for future stock should now be secured—for instance, Centaureas kept in pots during the summer time are better for propagating from than plants lifted out of the soil. Solanums, Wigandias, and various other sub-tropical plants, kept in pots and starved during summer, are also very useful for affording cuttings for the next season.

Herbaceous Plants.—These being now in great beauty, a little extra care should be bestowed on them. Lift such Hyacinths, Tulips, and Crocuses, as interfere with them, and spread them out to dry without removing any of the leaves. Cut over the decaying stems of Fritillarias and similar early flowering plants. Gather seeds of Scillas as soon as they are ripe, and sow them at once. To Hollyhocks, and some other plants that require support, apply strong stakes, but Campanulas, Delphiniums, Pentstemons, Antirrhinums, Pyrethrums, and some others of a similar character, look best when unsupported in that way. Transplant Primulas, kept in pots, on to a shady border, where they should be kept clean, and secure from slugs; P. japonica always grows better when planted out of doors than when grown in pots. A mulching of rotten manure, spent hops, cocoa-nut fibre, or leaf soil should be spread over the ground, and if its appearance on the surface is objectionable, cover it with soil. Phloxes like plenty of nourishment, consequently a little manure water should now and then be given them. Everlasting Peas, wintered in pots, may now be planted out. Viola cornuta and other bedding Pansies should be kept well furnished with young shoots by occasionally cutting out the old ones, and the beauty of both English and fancy sorts will be greatly prolonged if they are grown in a moist and partially-shaded situation. Train Clematises in such a way as they will look best. Such herbaceous plants as have been wintered in frames may now be planted out, but in the case of Dodecatheons, &c., intended still to be kept in pots, a shady position on a bed of ashes is best for them, and upon no conditions should they become at any time perfectly dry. Remove decaying flowers, except in cases in which seeds are to be sown. Transplant biennials and perennials, and as soon as they come into flower rectify the nomenclature of Irises, Lilies, Pyrethrums, &c., the names of which are apt to get misplaced during the operation of transplantation.

Conservatories.—Plants under glass are now growing vigorously; therefore, cold draughts must be avoided as much as possible. There must, however, be plenty of ventilation, abundance of water must also be given, and shade of some kind provided as a protection to plants in bloom, the beauty of which soon becomes impaired if exposed to sunshine. Give weak manure water to gross feeding plants, and from specimens planted out in borders remove all superfluous shoots and suckers. Tacsonias, Passifloras, Bignonias, Habrothamnuses, Loniceras, Maréchal Niel Roses, and other climbers, must be frequently regulated in growth, not so much by means of shortening their shoots as by removing the weakest of them. Fuchsias trained to rafters require thinning, and Clematises tying to trellises. Do not allow deciduous climbers to intertwine with evergreen ones, as they are apt to spoil the latter. Keep up a succession of Hydrangeas, zonal, show, and sweet-scented Pelargoniums, Fuchsias, Coleuses, Lobelias, Salvias, Cockscombs, Balsams, Schizanthuses, and similar plants, and transfer to frames or the greenhouse such plants as have done flowering. Heaths, and some other early-flowering, hard-wooded plants, may now be set out of doors on a bed of ashes, plunging the pots in cocoa-nut fibre, or some such material, to keep the roots cool and moist.

Greenhouse Plants.—Old plants of Agapanthus umbellatus will now be flowering abundantly, and should have plenty of water and a sunny position. Plants of Hebeclinium ianthinum should have been cut down after flowering, and should now be kept moderately dry for a time, unless it is necessary to force them early. Cut in hard-wooded Veronicas that have done blooming, so as to encourage fresh growth. Keep plants of Lisianthus Russellianus in a warm, moist place, and repot them as often as they require it. Pot off seedlings of Primula japonica, and keep them out of doors, where they form stronger plants than if nursed under glass. Shift Statices as they require it, and, when they begin to flower, give them manure-water, or place a mulching of manure over the surface of the soil in the pots in which they are growing. Lemon-scented Verbenas and Fuchsias should be started into growth, as required; those already started should be kept pinched in, to make them bushy. Keep Carnations in a somewhat shaded house. Plants of Kalosanthes should now have some assistance in the way of stimulants, as should also Liliums that have formed their flower-buds, and some other soft-wooded plants. Erythrinas in pots should be grown in a cool and light house near the glass; they require plenty of water, and their main branches should have supports of some kind to keep them in proper position. Bouvardias that were cut back after flowering should now be making good wood; they must, therefore, be kept moist and warm for some time yet. Persian Cyclamens should be kept in cool and shady frames, or against north walls; they should receive a little water during the summer months. C. Coum, and similar kinds, should also be kept moderately dry, but not too much so.

Azaleas and Camellias.—Azaleas that have done blooming, and which have had their seed-pods picked off, should be repotted if necessary, and put into a warm pit, where heat, moisture, and shade can be given them. Camellias also make good growth under similar conditions, as do also Citrons of various kinds. Pinching in should be practised freely until the plants have attained the form it is desired they should assume.

Stoves.—Ventilate, more or less, according to the state of the weather, and shade from strong sunshine. Keep the atmosphere moist by syringing not only the plants, but the stages and walls, and likewise by sprinkling the floor with water. Poinsettias should now be started into growth; they should be propagated by means of cuttings and eyes, and the young plants should be kept shifted on as they require it, and set near the glass. Plants of Euphorbia jacquiniæflora must be kept growing, and also near the glass, so as to ripen the points of the shoots. Pot on young plants of Sanchezia nobilis, Scutellaria mociniana and Ventenati, Pentas carnea, Linum trigynum, Monochætum ensiferum and sericeum multiflorum, Centradenias, Eranthemums, and others, using a compost of loam, thoroughly-decomposed manure, and a little peat. Increase the stock of Achimenes by means of cuttings; Gloxinias, by using good and well-developed leaves as cuttings; the fine-leaved Begonias in the same way as Gloxinias, and also by placing a whole leaf flat on the surface of a pan filled with silver sand and peat, and surfaced with sand, affixing the leaf thereon with pegs, cutting or breaking the ribs at intervals, and sprinkling some sand over the surface of the leaf; if kept damp and shaded, leaves treated in this way soon form buds at every break. The herbaceous kinds are best increased by means of cuttings. Keep Epiphyllums in a nice growing temperature, and Eucharis amazonica plunged in bottom heat, in a moist stove and flooded with water. Pot seedlings of Cyperus alternifolius, give them plenty of heat and moisture, and they will form, when one or two years old, fine plants for table decoration. Keep the Dracænas, Crotons, Ananassas, and other fine-leaved plants, near the glass, in order to bring out their colours, but preserve them from strong sunshine. Dipladenias, Allamandas, and similarly habited plants, hitherto run along the roof just inside the glass, on threads, may be taken down as they come well into bloom, and trained so as more fully to exhibit their beauty.

Suspended Baskets.—Remove any plants that appear to be exhausted, and replenish with fresh material; rather, however, than lift out many of the plants, plant the basket afresh, retaining such as are in good condition. Ferns, Selaginellas, Tradescantias, Begonia scandens, variegated Panicum, Asystasias, Achimenes, some of the creeping Ficuses, &c., do well in baskets kept in stoves; and for conservatory and balcony baskets take Ivy-leaved and sweet-scented Pelargoniums, brilliantly coloured Lobelias of the Erinus section, Petunias, Mesembryanthemums of different sorts, Tropæolums, Isolepis gracilis, Gazania splendens, Lysimachia nummularia, Ivies, Musk, Convolvulus mauritanicus, and many kinds of Ferns and Selaginellas.

INDOOR FRUIT DEPARTMENT.

Pines.—Water abundantly, and sprinkle the plants overhead either with a syringe or through a watering-pot rose. Remove all suckers, except such as are required for purposes of propagation; in the latter case, they should be taken off and potted when strong enough. Plants ripening fruit should be kept rather dry, and in order to keep them as long as possible in good condition remove them to a cooler house.

Vines.—Give a little fire heat, and also a little ventilation at the same time, to Vines that are in flower; a genial and moderately low equable temperature is of great service to the setting of the fruit. Attend to the timely thinning of the berries and pinching of laterals. Apply stimulants to such as have set their fruit, but have not begun to colour. Shift into their fruiting pots all pot Vines intended for fruiting next year.

Peaches and Nectarines.—Where these have been gathered, give the trees a good syringing, the borders a thorough watering, and continue a little fire heat until the wood becomes perfectly ripe. Give up syringing in cases in which the fruit is beginning to colour; but, until then, syringe daily; tie in and thin the shoots, and put aside any leaves that happen to overlap the fruit, so as to give it a chance of becoming well coloured.

Figs.—As soon as the first crop has been cleared off, mulch the soil with manure, water freely, and maintain a warm, growing, moist atmosphere.

Cucumbers and Melons.—Give Cucumbers a good supply of manure-water, stop laterals, and only retain as many fruits as the plants can well bear. Keep Melons ripening fruit rather dry; but water abundantly those swelling. Use tiles or slates for putting under the Melons if they are grown in frames. Prepare plants to take the place of those now ripening fruit; or, after the fruit has been cut away, cut down the old plants to two or three eyes of the stem, apply a dressing of fresh soil over the old material, give a thorough watering, and increase the temperature, when the plants will again start freely into growth.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

June 18th.

This was an unimportant meeting, except in the case of a few miscellaneous subjects, about which there was a certain amount of interest. The paucity of exhibits on this occasion was doubtless owing to the proximity of the society's great meeting at Bath. In the class of six Palms, Mr. Cole, of Ealing, was first, with half a dozen nice plants; and Mr. Fewel, Broad Green Lodge, Croydon, was second. In the nurserymen's class of eight Palms, Mr. Wm. Bull was first, with some very fine medium-sized plants of some of the newer sorts; and Mr. Aldous was second. Fuchsias formed the chief feature of the exhibition; but, amongst them, there was nothing remarkable, either in the way of kinds or cultivation. For six Fuchsias, Mr. J. Weston, Clapham Park, was first, with Arabella, Rhoderick Dhu, Conspicua, Lustre, Lucy Mills, and Enoch Arden. Mr. Walker, Gunnersbury House, was second; and Mr. James, of Isleworth, was third. For a dozen Fuchsias, Mr. James was first, with a group of small plants. In the class of six Pæonias, Mr. Parker, of Tooting, showed some well-bloomed specimens of the double-flowered kinds. The same exhibitor likewise showed a group of remarkably fine cut blooms, and also plants of the double-flowered Feverfews, likewise cut blooms of Irises. For a basket of plants arranged for effect, Mr. Hepper, Acton, was first, with a tastefully arranged vase, the stem of which was covered with Moss, studded with little Ferns. In the centre was a plant of Ananassa sativa variegata, and around it were Caladiums, Begonias, Cockscombs, Isolepis gracilis, the variegated Panicum, and similar plants. Mr. J. Aldous was second, and Mr. Cole third. From Messrs. Barr and Sugden came a collection of cut blooms of Irises, and a basketful of beautiful Lilies. Mr. Noble, Bagshot, sent a few plants of the pretty Spiræa palmata. Mr. W. Denning, Norbiton, furnished an excellent group of Orchids, including Dendrobium Bensonæ and Parishii, Lælia majalis, and purpurata, Palumbina candida with several graceful little flower trusses, and well-flowered plants of Aërides virens, affine, maculosum, and odoratum. From Mr. H. R. Smith, Ealing, came a collection of very fine Balsams and a group of Fuchsias, including Aucuba-blotched-leaved ones and several grafted forms. Messrs. Rollisson and Sons sent a group of beautiful seedling Gloxinias; and Mr. Linden, of Brussels, furnished some fine foliaged plants, viz., Phyllotænium Lindeni, Curmeria picturata, Tillandsia tessellata, Anthurium crystallinum, &c. Messrs. Backhouse and Sons, of York, showed a pretty example of the Californian Cyclobothra pulchella laden with its curious and pretty yellow flowers. Mr. Dean, of Ealing, sent flowers of some pyramidal Stocks remarkable for purity of colour and the closeness and doubleness of their flowers; also blooms of Canterbury Bells including many shades of colour. Mr. Luscombe, Combe Royal, Kingsbridge, sent blooms of a beautiful Sikkim Rhododendron, that thrives well in the open air in that part of Devonshire; and Mr. Croucher, gardener to J. T. Peacock, Esq., Hammersmith, sent a group of curious Agaves. From Mr. J. Edwards, gardener to Lady Prescott, Herne, Kent, came dishes of wonderfully large and fine Royal George and Violet Hative Peaches, and also dishes of very fine Violet Hative and Elruge Nectarines, as well as a brace of Cucumbers. Mr. A. Coulbourne, Woolhampton, sent a dish of Pitmaston Orange Nectarines, that were so large and fine as to be awarded a cultural commendation; the same exhibitor likewise showed a dish of the Japanese Loquat. From Mr. Wm. Tillery, Welbeck, came excellent dishes of Empress Eugenie, British Queen, and Lucas Strawberries. Mr. Cadger sent a fruit of his seedling Melon called Wrotham Park, a finely-flavoured white-fleshed medium-sized sort, with a beautifully netted white skin. Mr. Gilbert, Burghley, also sent a particularly good green-fleshed hybrid Melon, and Mr. J. Gardner, Elsham Hall, Brigg, contributed another seedling Melon. A dish of Apples in a good state of preservation was sent by Mr. Noble, Bagshot.

First-class Certificates—These were awarded to the following:—

Gloxinia, Brilliant (Rollisson), the flowers of which are brilliant scarlet and very fine.

Gloxinia, Rev. A. H. Bridges (Rollisson), a rose-coloured flower with a striped and mottled throat.

Gloxinia, Mrs. Fanny Wilder, the flowers of which have white edges suffused with scarlet.

Æchmea bracteata (Rollisson), a strong growing very fine Bromeliad.

Fancy Pansy, Richard Dean (Downie, Laird, and Laing), large blotches, with pure yellow margin, and chocolate upper petals.

Fancy Pansy, J. B. Downie (Downie, Laird, and Laing), dark maroon blotches and chocolate ground.

Fancy Pansy, Mrs. Nelson (Downie, Laird, and Laing), all the petals have large blotches of violet and white edges.

Fancy Pansy, Picotee (Downie, Laird, and Laing), a most peculiar flower, with very large dark maroon blotches, veined with same colour on a straw ground.

Fancy Pansy, Thos. Granger (Downie, Laird, & Laing), a superb flower, velvety brown with dark maroon blotches.

Fancy Pansy, Mrs. Michie (Downie, Laird, and Laing), large dark violet blotches, broadly edged with white.

COVENT GARDEN MARKET.

June 20th.

The supply of both home grown and foreign fruits and vegetables, though on the increase, is not greater than the demand. Great quantities of really good Pine-Apples have arrived from the Bermudas and the West Indies. Grapes are excellent, as are also Peaches and Nectarines. Forced Strawberries are nearly over; but outdoor ones are expected in quantity next week; some from the south-western counties have already appeared in the market. France and Spain are supplying us with salading, Turnips, Carrots, Artichokes, Cherries, Apricots, Plums, &c. Spanish Tomatoes are also plentiful, but in point of flavour they are inferior to English produce. Of flowers there is a large supply, particularly of Roses, Calceolarias, Hydrangeas, Pelargoniums, Pinks, Pansies, blue Centaureas, &c. There are also fine trusses of Stephanotis, Orchids, and other choice stove and greenhouse plants.

Prices of Fruits.—Apples, per doz., 2s. to 3s.; Apricots, 2s. to 4s. per doz.; Cobs, per lb., 2s. to 2s. 6d.; Cherries, per box, 2s. to 4s.; Gooseberries, per quart, 3d. to 6d.; Grapes, hothouse, per lb., 6s. to 15s.; Lemons, per 100, 6s. to 10s.; Melons, each, 4s. to 10s.; Oranges, per 100, 6s. to 14s.; Peaches, per doz., 18s. to 36s.; Pine-Apples, per lb., 8s. to 12s.; Strawberries, per lb., 6s. to 12s.; Walnuts, per bushel, 15s. to 30s.; ditto, per 100, 2s. to 2s. 6d.

Prices of Vegetables.—Artichokes, per doz., 3s. to 6s.; Asparagus, per 100, 3s. to 6s.; Beans, Kidney, per 100, 1s. 6d. to 2s. 6d.; Beet Red, per doz., 1s. to 3s.; Broccoli, each, 6d. to 9d.; Cabbage, per doz., 1s. 6d. to 2s.; Carrots, per bunch, young, 1s., old do., 8d.; Cauliflower, spring, per doz., 4s. to 8s.; Celery, per bundle, 1s. 6d. to 2s.; Coleworts, per doz. bunches, 4s.; Cucumbers, each, 4d. to 1s.; Endive, per doz., 2s.; Fennel, per bunch, 3d.; Garlic, per lb., 6d.; Herbs, per bunch, 3d.; Horseradish, per bundle, 3s. to 4s.; Leeks, per bunch, 6d.; Lettuces, per doz. 1s. to 2s.; Mushrooms, per pottle, 2s. to 3s.; Mustard and Cress, per punnet, 2d.; Onions, per bushel, 8s. to 12s.; button, per quart, 1s.; Parsley, per doz. bunches, 6s.; Parsnips, per doz., 9d. to 1s.; Peas, per quart, 2s. to 3s. 6d.; Potatoes, new, per lb., 2d. to 4d.; Radishes, per doz. bunches, 1s. to 1s. 6d.; Rhubarb, per bundle, 8d. to 1s.; Salsafy, do., 1s. to 1s. 6d.; Scorzonera, per bundle, 1s.; Shallots, per lb., 6d.; Spinach, per bushel, 3s.; Turnips, old, per bunch, 9d., young do. 1s.

ANSWERS TO CORRESPONDENTS.

Blue Cinerarias (V.)—Seeds saved from these generally come pretty true to their respective kinds, provided the plants are carefully kept away from all others whilst they are in bloom.——Rose Buds (Somerset House.)—Mr. Geo. Paul, to whom we submitted your case, is of opinion that ants are the culprits, as he has found them eating Rose buds after, he says, they had finished all the aphides which they could find upon them. Paraffin oil is spoken of as a remedy.——Paint (Conservatory.)—It is useless to paint over old paint, especially in your case. First strip off the old paint with hot irons, let the wood be thoroughly dry, and then apply three thin coats of pure white-lead.——Names of Plants (G. W.)—1. Spiræa Reevesiana; 2. Lonicera tatarica; 3. Epipactis latifolia.——(Violet Hill.)—Kindly send us fresh specimens.——Periodicals (W. W.)—*The American Agriculturist*, *The Cultivator*, *Hearth and Home*, *The Tribune*, *Moore's Rural New Yorker*, and *The Gardener's Monthly*, Trübner & Co., Ludgate Hill.——Fremontia (D. S.)—This flowers beautifully against a wall in the south of England, and will survive out of doors during the winter if its roots are protected from frost.

THE GARDEN.

> "This is an art
> Which does mend nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

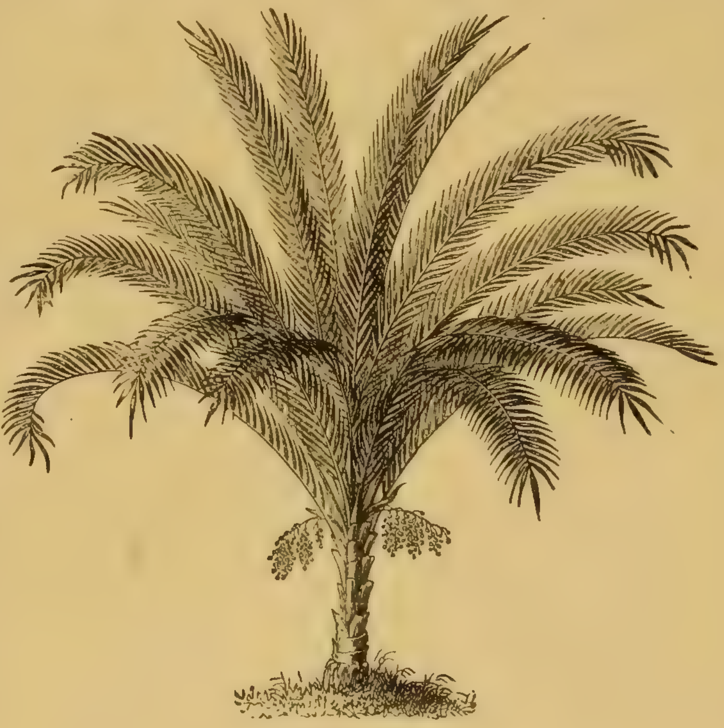
RIPENING THE WOOD OF PLANTS.

In the management of exotic plants of all kinds it is found that too little attention is paid to the proper maturation of the young growth, and that in consequence the flowering principle, and of course the fruiting also, is thus curtailed. This is more especially the case with the finer kinds of stove and greenhouse plants. We endeavour to grow them vigorously, but at the same time too frequently forget that strong growth and its complete maturation are not in this climate synonymous terms. Many good growers of hard-wooded plants object to placing them in the open air at all, but I am not of that number. Turned out upon the lawn, greenhouse plants may be made to serve a very interesting purpose, and to impart quite a new and exotic feature to the flower garden, while at the same time every facility is afforded for training the plants and otherwise attending to them. My plan is to plunge the plants at the proper time in groups, in which good specimens produce a fine effect. Of course, in such arrangement care must be taken in preparing the holes for the pots to secure proper drainage, and also by placing some lime-rubbish or cinder-ashes in the bottom, to prevent the ingress of worms. Plants so arranged have the advantage, so much to be desired, of a cool bottom, without the roots or pots being exposed at one time to scorching heat, and at others to cold chills. These are great points; for though, to secure the thorough maturation of the wood, full exposure is necessary for the branches, nothing is more injurious to tender-rooted plants than an undue exposure of their pots to a dry atmosphere. In exposing tender plants, however, for the benefit of the atmospheric influence, the fact must not be lost sight of, that while some plants require thorough exposure in order to mature their wood and set their flowers, others are better for partial shade; and many, as among our choicest Heaths and Chorozemas, do not set their flowers until the completion of their growth, in the very depth of winter, or even in spring. Even these, however, are benefited by full exposure in early autumn; for it never must be forgotten that, though a plant may not complete its growth before winter sets in, it may, by judicious exposure in the autumn, so elaborate and store up organizable matter as to induce almost invariably the flowering principle at the proper season. To secure a healthy bloom in hard-wooded plants of all kinds, the first point is to induce healthy and vigorous growth, and then to secure its proper maturation. This can only be achieved by proper exposure, not necessarily out of doors, but often under glass, by placing the plants in the lightest part of the house, and also by admitting a free current of air to pass through them. A plant may be starved into bloom, but that is not always the best way of effecting that object. What we want in plants difficult to bloom is healthy root-action, and with it firm, strong, short-jointed wood in proper season; then mature it properly, and bloom is certain. I once purchased a specimen plant of Erica depressa, of a variety which, it was said, would never bloom properly. The plant, though healthy-looking, was exceedingly weak, through an attempt having been made to starve it into bloom. I took an opposite course, potted it, and got it into good growth; and the following autumn almost every point or shoot was studded with flower-buds. Through the autumn, from June until September, the plant was placed in the full sun, the pot being plunged in cinder ashes, and the result was perfectly satisfactory. Now this is confessedly one of the most difficult Heaths to bloom well; but I am quite sure the failure arises more from starving than from liberal treatment. Some good cultivators object, as I have said, to exposing many of the finer kinds of greenhouse plants to the open air at all, more especially the finer kinds of Azaleas and Eriostemons. I do not like to expose them until their growth is completed, and their blooming rendered quite certain; but then, I think, a few weeks in the open air, more especially if the plants are not exposed to drenching rains, is very beneficial. Great care, however, must be taken to get the flower-buds of such Azaleas as Gledstanesi, variegata, and the like, plump and full before the plants are turned out; but the free-growing varieties bloom almost under any circumstances. The dews and gentle rains of autumn have a very invigorating effect upon plants, and if, during heavy rains, the plants are laid upon their sides, they are materially benefited, by the underside of the foliage being properly washed, and to some extent cleared of insects and bad leaves.

W. A.

PHŒNIX RECLINATA.

This elegant plant like its congener, the Date Palm (P. dactylifera), is a free and robust grower, and makes a useful decorative plant for a warm conservatory, and occasionally for the ornamentation of apartments. Its plume-like leaves are very gracefully curved, and being of a soft glaucous green colour, they contrast well with Ferns or other darker coloured foliage plants. Our illustration gives an excellent idea of the beauty of this Palm, just at the period when it assumes its true character and is most useful. Like its allies its succeeds well in good turfy loam, and when growing requires an abundant supply of water. It is propagated from seeds sown in light earth, the pots being plunged in a mild bottom heat and kept moderately moist until germination takes place.



Phœnix reclinata.

RHODODENDRONS IN BASKETS.

At the Maldon Show the other day, a capital effect was produced by a series of Rhododendrons placed in small round baskets and put on one of the tables. The brown of the Willows contrasted admirably with the glossy leaves and glowing colours of the gorgeous trusses of blossom. It struck me on the spot that these simple baskets might be very useful for forced plants in the conservatory, and in the furnishing of large houses with forced Rhododendrons. There is often a difficulty in finding pots large enough to take the balls. As far as the mere act of forcing is concerned, it is not needful either to pot or basket the plants. They do better with the balls simply plunged in a gentle bottom heat of tan or decaying leaves. I have found this mode of forcing large Lilacs, and other hardy plants, equally successful. Cut out a good ball, and plunge it in bottom heat. There is no fear of overheating, and the heat hits, excites, and quickens the roots, and starts the sleeping buds at once. A good deal of time is gained by dispensing with the pots; but, when the plant is wanted for conservatory, hall, or staircase decoration, it must be potted or put in a basket. The latter is by far the handiest, cheapest, and best method. Baskets may be had of any diameter and depth, and they are light and easily moved. Their relative flatness compared with pots, too, enables us to dispense with the leggy look that often mars the form of forced shrubs. As to watering, if the plants are to remain in the house, the baskets must, like pots, have an earthenware or tin saucer. And, then, what facilities wicker-work offers for the adornment of its sides! Should the brown Willow be offensive to the eye of taste, how easy to fringe it with Maiden-hair Fern or Lycopodium as we finish the process of basketing! Supposing one had to decorate a suite of rooms during the season of Rhododendrons in the open air, what could be easier than to go into the grounds, lift a score or two of plants, and basket them for the night or the week, and replace then when their beauty indoors has come to an end? Then those who study durability in all things, could easily have iron baskets made for these purposes. I use this word "basket" advisedly, because I mean something much cheaper, lighter, and even better for these uses than vases. The vase is always too prominent, and, in many cases, it eclipses its occupant. It is too high, too heavy, too elaborately designed or carved; its maker has determined to place it first, and we cultivators want the plants first, and a vase or basket to take the very subordinate place of holding or displaying the plant to the best advantage, while, to some extent, it is itself concealed. For this purpose, iron baskets, or the common round packing baskets, with which we are all familiar, would be admirably adapted for the holding of forced Rhododendrons, Ghent Azaleas, Deutzias, bush Roses, and for many other purposes; while for temporary uses the common brown wicker baskets might take a useful cultural, and even ornamental, part in most gardens. As the baskets get too old for showing the plants in, they might be used for growing them in until they flower, and by growing them in a size smaller than they are to be exhibited in, there would be no disturbance on transferring them from the forcing bed to the display room or house, while the interstices between the baskets could be furnished as already proposed, or fringed with the drooping leaves of the Isolepis gracilis, Ivy-leaved Geraniums, Ivy, variegated Periwinkles, or delicate Lobelias, showering down azure and white. D. T. FISH.

Orchids in Flower.—Amongst the Orchids at present in flower at Kew, may be noticed Cælogyne ochracea, bearing numerous erect spikes of white flowers, the three-lobed lips being blotched with lemon yellow, and the blotches themselves margined with bright red. The pseudo-bulbs are fluted or ribbed, and each bears two oblong leaves. The flowers are delicately perfumed. Trichopilia Galeottiana, a curious species, with linear pseudo-bulbs, each bearing a solitary oblong leaf. The flowers are borne profusely, and differ from those of most other species in the genus, being of a pale sulphur yellow, the disc of the convolute lip being of a bright orange. This plant has been exhibited at the London exhibitions as T. turialvæ. Oncidium Lanceanum, a very fine old Orchid, rather difficult to cultivate, is also producing a nice branched spike of its large and richly tinted flowers. Of this Oncidium there are two varieties, in one of which the lip is almost white. If the flowers of both kinds are kept free from damp, they will last in good condition for several weeks at a time, and when produced in abundance, which seldom happens, they are very effective. As a curiosity, Epidendrum campylostylis is well worth notice. It has flat pseudo-bulbs and foliage very much resembling some Trichopilias, and bears an erect ten to twelve flowered spike of dark brown and yellow flowers. The backs of the sepals and petals are of a peculiar mealy hue, and it is quite distinct from any other species in the genus.

CYPRIPEDIUM DOMINIANUM.

SOME of the finest Orchids in cultivation owe their origin to the art of hybridisation, and among such triumphs of skill may be classed the many beautiful hybrids that have from time to time been raised in the Royal Exotic Nursery, Chelsea. The interesting variety of Cypripedium, of which the next page presents an illustration, is one of the latest hybrids obtained by Mr. Dominy, in compliment to whom it has been named by Professor Reichenbach. Its parents were the long-petaled C. caudatum, already described in our columns, and the pretty little C. (Pearcei) caricinum, and between these two species it is as nearly as possible intermediate. The leaves are broader than those of C. (Pearcei) caricinum, but narrower than those of C. caudatum. In habit the plant most resembles C. caricinum, but the flowers are much larger and brighter coloured. The petals remind one of similar appendages in C. caudatum, but they are twisted spirally like those of C. caricinum. The flowers, which are produced two or three together on tall scapes, are of a greenish yellow colour, shaded with reddish-brown and spotted with purple. The staminode and the basal portions of the petals are densely set with stiff hairs. Mr. Dominy has been very fortunate in his attempts at hybridising Cypripediums, having obtained two varieties prior to the one now described, viz., C. vexillarium, and C. Harrisianum, the latter being a very profuse bloomer, the result of a cross between C. barbatum and C. villosum. Apart from the beauty belonging to these hybrids as decorative plants, they are interesting as illustrating the near relationship or affinity that exists among species. The Cypripedium now figured grows well in an intermediate house, treated like others of its class, and, as it flowers in tolerable profusion, it is a welcome addition to this interesting group of Orchids.

F. W. B.

THE GARDEN GUIDE.

SUFFOLK.

ELVEDON HALL.

THIS has recently been rebuilt and furnished in regal style for his Royal Highness the Maharajah Dhuleep Singh. The house is surrounded by a small park, and though much of the property is little better than blowing sand, yet plantations of Scotch Firs and others abound in all directions. Until quite recently, there has been but a very small garden at Elvedon; the kitchen and flower gardens and pleasure grounds being more like those belonging to a villa residence than a princely house; a great part of the flower garden, also, used to be an aviary, where the gay-coloured birds of India plumed themselves and displayed their brilliant hues, rivalling the flowers themselves in beauty. A new kitchen garden has, however, recently been formed, and some fine Vineries and other glasshouses have been erected. The flower garden and pleasure grounds, too, are in course of formation, and it seems probable that Elvedon will soon be surrounded by gardens worthy of the richness and splendour that characterise the new residence. His Royal Highness is fond of planting, and most trees and shrubs grow well on the light land around the house, provided it is trenched and manured. The situation in which the house stands is flat, and there is little landscape beauty within reach. Still capital, skill, and taste will doubtless, in a few years, render the gardens of Elvedon Hall worthy of their royal owner.—The Maharajah Dhuleep Singh; gardener, Mr. A. McArthur. Three and a half miles south-west of Thetford.

EUSTON HALL.

This is situated on the side of a magnificent park of over 1,400 acres, extending nearly two miles along the banks of the river Thet, which is crossed by a wooden bridge close to the mansion. The scenery is rich and beautiful, reminding one of Bloomfield's "Farmer's Boy," in which it is said, "the woods and groves in solemn grandeur rise." On the southern side of the park Fakenham Wood covers over 300 acres, and is one of the largest plantations in the country. Most of the more elevated knolls are crowned with wood, which apparently adds depth to the lower portions—they can hardly be called valleys. What is called "the Duke's Walk" starts from near the house, and proceeds in a straight avenue of great width right away to Newmarket. The late Duke of Grafton was fond of planting and rearing trees and shrubs. Both the park and the estate generally are, therefore, well wooded. The mansion, which is of red brick, stands very little above the water level. The Thet is here widened out into a lake. Immediately in front of the house is a geometrical garden; then, on one side, an old French or scroll Box garden, flanked by glasshouses and walls, and then the park, richly clothed with trees, rises and rolls away beautifully in the distance. Nearer to the river, a series of lawns, shrubberies, rooteries, and comparatively wild gardens stretches away to a considerable distance, until they merge into the park and plantations. On an elevated knoll in the park stands a temple or banqueting hall, commanding fine views of the surrounding scenery, and forming a striking object for miles around. It was constructed from a design furnished by Kent. The kitchen gardens at Euston are large, occupying a good many acres, and are enclosed with fine walls. There are some old, and several very fine new Vineries. A large portion of the ground is devoted to the rearing and growth of forest trees, for the making up of old, and the furnishing of new, plantations. On various parts of this fine estate Scotch Firs and Spruces are used for forming roadside hedges; these do exceedingly well on light soils, and form dense lines of sombre beauty, giving a unique character to the landscape. Altogether Euston Hall has a ducal air about it; the house is massive and striking, and the park magnificent.—The Duke of Grafton; gardener, Mr. Lowe. Four miles south-east of Thetford, ten miles north by east of Bury St. Edmonds.

Dominy's Lady's Slipper (Cypripedium Dominianum), p. 490.

OAKLEY PARK.

This is one of the richest and most beautiful seats in the county of Suffolk. The park is finely undulated, richly wooded, and contains about five hundred acres; part on one side, and part on the other, of the charming little river called the Ouse, that runs along the valley. The mansion is an elegant Grecian structure, of noble outward proportions and rich internal arrangements. The banqueting hall is filled with the choicest statuary, and a gallery 80 feet long is supported by a series of marble columns of exquisite beauty and symmetry. It overlooks the lovely valley of the Ouse, and is surrounded by fine pleasure grounds rising from the house and sweeping away in rolling green lines of beauty, embellished with statuary, fine trees and shrubs, and glowing with the brilliant colours of flowers. There is also a small garden immediately in front of the house. The kitchen garden, which is some way off on a higher level, is well furnished with fruits and vegetables, and a nice range of fruit houses. Timber grows freely in the park which is richly clothed with Oaks, Beeches, and other trees of great age and size. Altogether Oakley Park is a princely residence, the timber and other associations linking it to olden times, while the gardens and their keeping are fully abreast of modern taste and the most recent horticultural improvements.—Sir Edward Kerrison, Bart.; gardener, Mr. William Robins. Three and a half miles from Eye, five miles E.S.E. of Diss, and six miles S.W. of Harlestone.

BROOME HALL.

This is a fine old mansion, said to have been built in 1590, and some portions of the house still exhibit fine specimens of the old English style of architecture. It is approached through a fine avenue of Oaks, far too rare in this country—the home of the Oak. In leaf and bole we have hardly any tree better fitted for avenues than the Oak, and yet it is comparatively seldom used for that purpose. The house is well shut in by surrounding woods plantations, and pleasure grounds, and skirting its base are terrace and other gardens, in character with the style of the building. A low retaining wall is richly furnished with Tea and other Roses. Then follow terrace-walks, fences of shrubs, geometrical flower gardens, &c., richly furnished and well kept. There is also a useful series of plant houses here, well furnished with fine foliaged stove and greenhouse plants. There is little or no kitchen garden, and no fruit houses at Broome Hall, as it is within an easy drive of Oakley Park, and also belongs to, and is occasionally occupied by, Sir Edward Kerrison. Broome is, therefore, to a great extent, the plant place for Oakley, and Oakley the fruit and vegetable garden for Broome.—Sir Edward Kerrison, Bart.; gardener, Mr. Peacock. Two miles north of Eye, four miles south-east of Diss.

FINBOROUGH HALL.

This is a handsome white brick building, erected about eighty years ago. It stands on a charming site—almost the highest part of a park of 200 acres — commanding fine views of a valley watered by a rivulet that joins the Gipping and Orwell near Stowmarket. The park is beautifully undulated and well wooded. It is also skilfully planted with clumps of trees, and some portions of it are bounded by thriving plantations. The gardens around the house are pretty, and extremely well furnished and kept. Coniferæ do well at Finborough, the soil being a good loam, and there are many fine thriving specimens around the house. Tea and other Roses are plentiful and healthy. The kitchen garden has been recently rewalled in the most substantial manner, and well nigh remade. It is a noble garden, and the walls are rapidly being furnished with fruit trees of all the best varieties.—R. J. Pettiward, Esq.; gardener, Mr. Henry Southgate. Three miles west by south of Stowmarket.

THE FLOWER GARDEN.

LILIES PAST AND PRESENT.

Group I (Earliest Flowering Kinds).

It may be interesting to know which Lilies now in cultivation were grown and described by Parkinson 250 years ago, and a comparison of the time at which some of them bloomed then with that at which they flower now may also afford an answer to the oft-repeated question—"have not our seasons changed?" The names quoted are taken verbatim from Parkinson's "Paradisi."

1. "Martagon pomponeum, sive Lilium rubrum, vel Lilium Macedonicum, the early red Martagon" of Parkinson, who adds, "Time of flowering, end of May," which corresponds exactly with the time of flowering in 1872, but ten days earlier than in 1873. (L. pomponium of "Bot. Mag.").

2. Martagon pannonicum, sive exoticum flore spadiceo, the bright red Martagon of Hungary" (Lilium carniolicum, notable in the auction mart, or, as the Americans would call it, the Two dollar Lily). Parkinson says he found very little difference between this Lily and the preceding one; an observation which corresponds with my own experience; the footstalk of the flower is longer, and the leaves are a trifle broader than in the preceding kind, but in other respects the two plants are alike.

3. "Martagon luteum punctatum" (Lilium pyrenaicum of the "Bot. Mag."). This differs from No. 1 in being yellow.

4. Lilium pumilum cruentum" (Lilium tenuifolium of the "Bot. Mag."). "This kind," says Parkinson, "sometimes yields double flowers," but of this I have no experience; I do not find the fact recorded anywhere else. Some of your readers may be able to furnish information on the subject.

5. Lilium monadelphum Szovitzianum (Colchicum). With this Parkinson was evidently unacquainted; amongst early flowering Lilies it is a prince—fair in form and noble in bearing, with a colour varying from delicate lemon to rich canary, some profusely and others sparsely spotted.

6. Buschianum of Loddidge's "Bot. Cabinet." A charming early flowering dwarf species, evidently a congener of sinicum of Lindley, concolor, concolor angustifolium, parthenium, &c., of other authorities, but a little more robust.

7. Davuricum, supposed by Mr. Baker to be the parent of the European Red Lilies, now offered in the trade under the names of umbellatum, atrosanguineum, fulgens, Vulcan, Rubens, fulgidum, &c. From these it differs mainly in the foliage being more slender, and the umbels of flowers being not so large. This section is no doubt "Lilium aureum, the golden red Lily," of Parkinson.

8. Davuricum var. Vulcan, rich crimson, shading down to orange, and generally without spots.

9. Davuricum var. Rubens. This differs from No. 8 only in being spotted.

10. "Bulbiferum cruentum" of Parkinson. This is a good distinct species; colour rich crimson, with bulblets in the axils of the leaves.

11. Thunbergianum brevifolium; colour rosy-apricot, spotted towards the bottom of the petals. I found this amongst some freshly-imported Japanese Lilies.

12. Thunbergianum leopardinum. The colour of this resembles that of No. 11, but it is spotted all over to within half an inch of the tips of the petals; not in commerce.

13. Thunbergianum cruentum maximum, rich blood-crimson; leaves long; flowers very handsome; not in commerce.

14. Thunbergianum Barri. This handsome variety came amongst some imported bulbs of auratum; colour rich crimson, profusely spotted with black; petals beautifully recurved. Not in commerce.

All these Lilies are extremely handsome conservatory plants; cultivated under glass, their beauty is enhanced, the foliage more delicate, and the colours more refined than if the plants are grown out of doors. I except from this general remark Nos. 1, 2, and 3, on account of their odour. Peter Barr.

12, King Street, Covent Garden.

AQUILEGIA GLANDULOSA GIGANTEA.

This lovely Columbine certainly ranks amongst the most handsome of all hardy herbaceous plants; and no garden, whether large or small, should be without a bed or clump of it. It is now in full flower here, and has been in beautiful condition for the last fortnight or more, and the effect produced by its large blue and white flowers is very remarkable, and exceedingly pleasing, whether as seen from a distance, or when subjected to closer examination. The variety called gigantea is an improvement upon the old and well-known Aquilegia glandulosa, which is somewhat difficult to grow and flower satisfactorily in some soils and situations, a remark which does not in any degree apply to its variety gigantea, which is of easy cultivation, and of a robust and vigorous habit of growth. Like many other flowering plants it is much more effective when grown *en masse*, or in the form of a bed or clump, than when seen in the form of an isolated specimen, but in whatever way it may be grown it is exceedingly beautiful. It reproduces itself perfectly true from seed, if no other plants of the Columbine family are grown in its vicinity. And if seeds of it be sown now in pans or pots, and placed under glass in a pit or frame where they can be shaded from the noonday sun, they will germinate freely. When the young plants are large enough to handle, let them be pricked out upon some shady border or similar situation, until about the first or second week in October, when they may be transplanted into a bed of moderately rich light soil, where they are intended to flower, which they will commence to do about the third week of next May. They will, however, flower more profusely and produce larger blooms during the second season than the first, and I may add that they are exceedingly useful for cutting for glasses, &c., in which their peculiar and beautiful colours are always held in the highest estimation. P. G.

Culford, Bury St. Edmunds.

JESSAMINES.

These are distinguished by their sweet odour; particularly Jasminum gracile, undulatum, azoricum, Sambac, officinale, grandiflorum, fruticans, and odoratissimum. In former times, J. Sambac, and particularly its double-flowering variety, formed prominent objects in stoves, on account of their free blooming character. The greenhouse species, J. officinale, grandiflorum, and odoratissimum, were also held in high estimation. Those that require the protection of glass may be grown either in pots, or, what is still preferable, planted out and trained around pillars, &c., where they enjoy all the sun and light possible. A compost of equal parts of peat, loam, and well decomposed leaf-mould, mixed with silver sand, accelerates their growth. The size of the pots entirely depends on the size and vigour of the plants; however, as the roots naturally spread on the surface, shallow and wide pots are preferable to narrow deep ones. During summer, when growing, the Jasminum delights in a high temperature, and it should have plenty of water; but in winter, during its period of rest, it likes a comparatively low and dry atmosphere. The best time for repotting is the spring, when the roots, as well as the old wood, are pruned back. Jasminums are propagated by cuttings, placed under a bell-glass, in the common way. As regards temperature, Jasminums may be arranged in three classes, according to the latitudes of which they are natives. 1. Tropical, requiring the temperature of a stove; 2. Intermediate, the temperature of a greenhouse; and 3. Such as bear the winters of our climate out of doors. No doubt J. officinale, though it is the most common, deserves to be more generally cultivated than it is, as it is perfectly hardy and grows and flowers freely trained to a wall with a south aspect. Jasminum grandiflorum, though generally grown out of doors, is apt to suffer from frost, if not carefully protected; this is the best for early forcing. Jasminum fruticans, from the south of Europe, stands out in a sheltered position during winter, and when covered with its yellow fragrant flowers is a great ornament to our gardens. J. humile, a dwarf kind, as its name implies, is hardy, and flowers profusely. J. heterophyllum, pubigerum, and revolutum, from the East Indies (Nepaul and Hindostan), are generally hardy, though the young shoots suffer sometimes in severe winters. J. revolutum and J. nudiflorum seem to be the hardiest of all, and the latter is one of our most valuable winter-flowering plants. Mixed with Ivy against a wall, where its cheerful round yellow blossoms, each as large as a shilling, are backed up by green leaves, the effect which it produces early in the year is quite charming. Delta.

THE GREAT REED.

(ARUNDO DONAX.)

When well grown this is admirably adapted for moist low-lying portions of the lawn or pleasure grounds, or for moderately sheltered situations in the vicinity of ornamental water. There are few hardy foliage plants that rival this in stately dignity after it becomes thoroughly established, either as planted alone, or when grouped with Pampas Grass, Chamærops humilis, or the larger Yuccas, all of which grow luxuriantly in our warm southern counties, and are invaluable to the horticulturist, enabling him to add charming variety of form to the garden landscape, and to tone down the glaring colours of our chromatic flower beds, with forms that partake somewhat of semi-tropical grandeur. The plant we are now more particularly alluding to is rather difficult to establish in some localities, and on dry, barren, or sandy, soils it is as well to excavate 3 or 4 feet deep and fill in with a load or two of rich unctuous loam, in which it is generally found to thrive most luxuriantly if well supplied with water. Our illustration gives an excellent idea of the portly appearance assumed by this species. Among other places where this plant succeeds well in the south, we may allude to the grand proportions which it attains at Syon House. It grows there from 9 to 10 feet high, in dense masses, nearly as much in diameter, and forms a truly imposing object, none the less beautiful because uncommon in the majority of gardens. It is easily propagated by dividing large clumps, or the thick cane-like stems may be cut down and thrown into any tank or pond where they will quickly emit growths from the latent auxillary buds, and, after these are rooted, they may be grown on and established in positions where they are to remain. A. Donax variegata is a dwarfer growing plant, rarely exceeding 2 or 3 feet in height, each leaf being striped with creamy white. This variety succeeds in our warm sheltered gardens in the south, but it does not possess the stately appearance of the green-leaved species. The variegated form is, however, simply invaluable for the flower garden, either in the centres of beds grouped with the choicer hardy plants, or isolated on the turf. It should have a well drained position, a deep warm soil, and a slight protection over the roots in winter. In Spain, and countries possessing a similar climate, the stems of this form of Arundo Donax attain a considerable height, and the leaves are broader and better variegated than with us.

The Great Reed (Arundo Donax).

When to Transplant the Pampas Grass.—M. May, in a recent letter to the *Revue Horticole*, remarks that he has frequently heard persons complain of their want of success in transplanting the Pampas Grass, nearly all the cases which were related to him involving the quickly-succeeding death of the plants. The reason of the failures, he states, is that they were transplanted at an improper season, viz., during the time of rest, when, as a rule, none of the Monocotyledonous plants like to be disturbed. In addition to this, the plants are usually lifted with an insufficient ball. If, on the contrary, the plants are lifted in May or June, replanted immediately, and copiously watered, there is little fear of failure. As an instance, M. May states that one of his friends transplanted in this way thirty very strong tufts of the Pampas Grass early in June. Not one of the plants was lost; they appeared to recover almost immediately, and flowered the same year, just as well as if they had not been disturbed.

NAMES OF NEW FLOWERS.

In old times there were poets or scholars who baptized flowers—why should the new ones receive either hard, ugly, polysyllabic Latin or Greek names, or foolish and unmeaning ones, when every blossom of them deserves so well a simple, expressive, and charming title? Besides, to get a new "sport" well known and popular, a becoming title is half the battle. The astronomers, with their comets, stars, and asteroids, are far wiser—they never find out a stranger orb in the sky but they affix the cognomen of some graceful nymph or goddess to their discovery, and when a courtier sage some while ago started a bad new fashion by calling the remotest planet of our system Georgium Sidus, his silly flattery was very properly cancelled, and everybody now knows that distant world under the better name of Uranus. A proposition has lately been made to send the raiser of new Pelargoniums and Roses to Homer for his nomenclature. If gardeners had time to study entomology, they would find that this would be poaching on the preserves of natural history; for the butterflies have long been called after the heroes and heroines of the "Iliad" and "Odyssey." Agamemnon is a magnificent lepidopteran, all emerald and black velvet; Polydamas is a crimson and gold wonder from Brazil; Menelaus stands godfather to a gorgeous azure and brown butterfly; and all the others are familiarly known to the collectors under these two heads of Trojans and Greeks. The idea, however, is a good one, and might be very well carried out by resorting to our own poets. Shakespeare, Chaucer, Spenser, and the other best known English bards would supply names for as many really new and lasting varieties as our floral experimentalists can establish for the next century. A white blush Rose, christened after Imogen—a gorgeous crimson Pelargonium called Cleopatra—a delicate new Pansy published as Ophelia, would be ten times fitter than the absurd habit of clapping some male notoriety's unmusical cognomen upon a fair and graceful blossom. Roses especially have been most outrageously treated in this way; and, though "by any name they smell as sweet," yet who would not sooner set in his button-hole a Juliet or a Perdita than be told that the lovely creation which delights sense and mind is a "Giant of Battle" or a "Mrs. John Jones"? We want, in fact, a second Linnæus, who shall unite science and fancy in the honourable task of rechristening beautiful new flowers. Odontoglossum coprosma and Skimmia japonica are horrible combinations, the like of which should be confined to outlandish foreigners; but for English-reared blooms English titles of the old sort are surely best, and, failing the help of him who gave us the delightful names of old, let us by all means go to Shakespeare, Chaucer, and Tennyson. There may be fancy displayed, as well as melodious words chosen. Elaine, the Lily-maid of Astolat, ought to have the next new Lily; Rosalind the next Rose, or, if it were a specimen with blood-coloured specks on pale petals, then Lady Macbeth. The choice would be endless, and if a careless or injudicious cultivator should give the red hue of Lancaster's Rose to some offspring of the House of York, better even that than "Mrs. John Jones"!—*Telegraph.*

THE BEST PHLOXES.

The following brief descriptive notes refer to a selection of the best varieties in the rather extensive collection of Phloxes grown for trial at Chiswick in 1872. The plants were all young and vigorous, and therefore fairly comparable as to the results of the season's growth. The advance as to quality observable in these useful hardy summer flowers since the last trial took place at Chiswick, was very striking. Those varieties to which the Floral Committee awarded marks of merit (indicated by asterisks, *** being the highest award), were conspicuous either for their bright and pure colours, the fine smooth even outline of the individual blossoms (pips), or the bold panicles in which the flowers were massed, all these desirable qualities being in most instances associated.

***A. F. Barron (Downie & Co.).—Rose, with bold deep crimson eye; extra fine. One of the best.

***Borée (Downie & Co.).—Rich shaded rosy amaranth; fine.

***Chanzy (Downie & Co.).—Large, rosy purple, with deep crimson eye.

***Deliverance (Downie & Co.).—Pale rose, with purple rose eye. In the way of Madame Moisset; but the eye is smaller than in that variety.

***Edith (Parker).—White, with rosy purple eye; dwarf habit.

***Lothair (Downie & Co.).—Bright deep salmon rose, with bold rosy crimson eye; very fine. One of the best.

***Madame la Comtesse de Turenne (Parker).—White with pale purple eye; a bold grand flower of very fine quality. One of the best in the collection, and the best of its class.

***Madame Domage (Downie & Co.).—Large, white, with very large deep rosy crimson shaded eye.

***Madame Guillotteaux (Downie & Co.).—Deep crimson purple, with crimson eye.

***Madame Moisset (Downie & Co.)—Pale rose, with deep rosy crimson eye; fine.

***Menottii (Downie & Co.).—Lilac, with large white eye; very distinct and pretty.

***Mons. Conrad (Downie & Co.)—Deep bright salmony rose; fine.

***Mons. Domage (Downie & Co.).—White, with clouded purple eye.

***Mons. Malet (Downie & Co.)—Lilac, paler at the centre; very dwarf habit, and producing large compact panicles of flowers; a very fine variety. One of the best.

***Mons. Rafarin (Downie & Co.).—Bright salmon, with dark eye; small flowers in compact panicles.

***Mons. Taillard (Veitch).—Bright salmon-rose, with rich purple eye.

***Mons. Thibaut (F. & A. Smith).—White, with bold purple-crimson eye; a remarkably smooth and effective flower; extra fine. One of the best.

***Queen of Whites (Downie & Co.)—Large, finely shaped, pure white, in grand panicles.

**Amabilis (Parker).—Light salmon, with deep rosy crimson eye; good habit and free.

**Duc de Plaisance (Downie & Co.).—Large-flowered, rosy crimson.

**Foudroyant (Downie & Co.).—Bright deep crimson-purple.

**Madame Barillet (Downie & Co.).—Blush white, with large bright-rose eye; small flowers in compact panicles.

**Mr. Hugh Low (Veitch).—Deep purple-crimson, with crimson eye.

**Mrs. Dombrain (Downie & Co.).—White, with deep crimson eye; small flowers in compact panicles.

**Roi des Roses (Veitch).—Rosy salmon, with dark eye.

**Venus (Downie & Co.)—White, with rosy crimson eye, changing to purple.

*Madame Caen (Downie & Co.).—Whitish, with large shaded deep rose centre.

A large number of other varieties were grown; but as they were passed over by the committee as inferior to the sorts named above, it is unnecessary to describe them.—*T. Moore, in "Royal Horticultural Society's Proceedings."*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Thyme for Walls.—I was pleased to find the other day quite a plantation of the common Thyme on the top of a brick garden wall, and, as I observe The Garden has said a good deal on plants for walls, I thought it might be worth while informing you of the fact.—B.

Roses for the Walls of Churches.—The walls of Chiselhurst Church are now so beautifully embellished with Banksian and other Roses, that they remind one of the loveliness that might be added to every church by similar means. Generally the walls of churches are bare, and their aspect anything but cheering.—B., *Bromley.*

THE FRUIT GARDEN.

PREPARING STRAWBERRIES FOR FORCING.

No time should be lost in the rooting and the growth of the plants for next year; for as is the strength and maturity of the crowns this autumn, so, with fair treatment, will be the crop of fruit next spring. It is possible to wreck a good prospect by bad management in the forcing. It is impossible to force fine fruit out of weak crowns; or, to put it more correctly, the forcing of Strawberries is a development, not a creation. The embryo fruit that is to be finished and eaten in the spring of 1874 must be formed this autumn. Nothing can be brought out of the plants then that is not laid up in them within the next three months; hence the importance of laying in vigour, storing up strength, without a moment's loss of time. Those nut-brown crowns that we desire to see by-and-by are but the outer coats of bold trusses of blossoms and mellow masses of luscious fruit. They are formed now; the heat and moisture of our forcing brings them to maturity. But it cannot be too often repeated that no amount of heat, moisture, food, or even light can make Strawberries in the early spring that had no existence the previous autumn. In growing strong plants, and maturing that growth now, we are simply preparing fruit for future eating. Our sole business is to make fat, plump, ripe crowns; that accomplished, fruit in plenty succeeds as a matter of course. In the pursuit of this object it is needful to select our plants with care. Among several varieties of Strawberries, notably Keens' Seedling, a greater or lesser number of useless drones—that is, barren plants—find their way. Naturally these plants, having done nothing else, grow; they throw out a prodigious number of strong runners—from twenty to thirty to a plant is no uncommon progeny; and they root speedily and make rapid progress. Hence it comes to pass that the Strawberry layer, unless carefully instructed, is almost sure to lay these barren plants. Woe betide those who trust to those next spring; they will prove nearly all barren or worthless. Degenerate plants—spurious, barren, or comparatively unfruitful—are apt to creep in among other varieties, though seldom in such numbers as among Keens'; and if they are laid, mortification and disappointment are the issue. To guard against such failures, it is good practice either to pull up and destroy every doubtful plant while the Strawberries are in fruit, or to layer the plants for forcing at that time. Then, of course, only the runners of the best and most fruitful varieties would be chosen; and there are great differences among Strawberry plants of the self-same sorts grown side by side. By selecting only and always the best, doubtless our strains would be improved, while we should escape that greatest of disappointments, the finding nothing but leaves when we come to look for fruit next March or April. I know there are some cultivators who think all such care in the selection of plants needless; they contend that the barren plants of one year may be fruitful the next. Sometimes it may be—I believe is so—but more frequently it is otherwise, and we ought to run no risks of failure that foresight and care can avoid. Others have panaceas against barrenness, such as rejecting the first runner and choosing the second, and many other fantastical means. They contend that their plants are thus all, and always, fruitful. I cannot say that I have ever found any difference between first, second, or third runners; but occasionally useless runners have enormously large leaves and very small crowns. I have rejected such in favour of those in which the conditions were comparatively reversed; for our object is crowns, not leaves, or, at least, only the latter as subsidiary to the former. The best and quickest mode of proceeding is to layer the runners in pots at first. Some use small pots to root them in, others shift into the next size as soon as rooted, and finally into the fruiting pots. Others layer them in 6-inch pots at once. Either way answers well. The latter, however, is apt to exhaust the soil before the roots are able to feed freely upon its richness. As to the soil to use, there is none better for Strawberry plants than a somewhat strong calcareous turfy loam, enriched and ameliorated by a sprinkling of bone dust, lime rubbish, and soot. Place also a pinch of soot over a few inches of loam that overlay the three or four crocks. This baulks the worms and snails, and the roots revel in and like it. It is impossible, if the soil is fairly dry, to pot Strawberry plants too tightly by the use of the hands only. Firm potting is one great secret of a strong robust growth. Rich composts send the plants leafwards rather than fruitwards. It is easy to feed the plants in the spring with manure-water by double potting, or standing the pots on a base of dung, turfy loam, &c.

A great error in Strawberry forcing is that of over potting, and I believe plants in large 48's or small 32's will produce crops superior in every respect to plants grown in larger pots. Nearly forty years ago I saw a grand crop of Strawberries at Castle Ashby, near Northampton, in 60-sized pots, standing on a thick turf; each plant had a single flower-stem, and four to six fruits, thinned so as to ripen and be gathered in the bunch. Where monster fruit are required, to thin to three or four fruits is the rule.

A.

THE BREAD-FRUIT.

(ARTOCARPUS INCISA.)

Of this celebrated tree there are two species, the Bread-fruit, properly so called (Artocarpus incisa) and the Jaca or Jack-fruit (A. integrifolia). The first-named is the Bread-fruit so well known in connection with the history of the South Sea Islanders, the mutiny of the Bounty, and the romantic colonisation of Pitcairn's Island, which was the result of that memorable and tragic episode. The Jack fruit is chiefly confined to the S.E. district of the continent of Asia and the islands of the E. Indian Archipelago. Its fruit is inferior to that of the Bread-fruit tree proper, being neither so palatable nor so nutritious. The Bread-fruit of the South Sea Islands is a handsome tree, about 40 feet high, and the trunk, when full grown, is from a foot to 15 inches in diameter. The branches commence at about 10 or 12 feet from the ground, and stand out almost horizontally from the stem. The fruit, when ripe, is about 9 inches long, of a roundish-oblong shape and greenish colour, and usually rough on the exterior with hexagonal knobs or prominences. The pulp is white, partly farinaceous and partly fibrous until it is quite ripe, when it becomes yellow and juicy. In the island of Otaheite and other places where the Bread-fruit forms the chief support of the natives, it is gathered before it is quite ripe, and, when roasted until the outside is charred, the pulp acquires a consistency not very unlike that of wheaten bread, and the taste is intermediate between that of bread and roasted Chestnuts. The earliest account of the Bread-fruit is that given by the celebrated navigator Dampier in 1688. He says, "The Bread-fruit grows on a large tree; it hath a spreading head, full of branches and dark leaves. The fruit grows on the boughs like Apples; it is as big as a penny loaf when Wheat is at 5s. the bushel; it is of a round shape, and hath a thick tough rind. When the fruit is ripe, it is yellow and soft, and the taste is sweet and pleasant. The natives of Guam use it for bread. They gather it when full grown, while it is green and hard; then they bake it in an oven, which scorcheth the rind and maketh it black; but they scrape off the outside black crust, and there remains a tender thin crust; and the inside is soft, tender, and white, like the crumb of a penny loaf. There is neither seed nor stone in the inside, but all of a pure substance like bread. It must be eaten new, for if it be kept above twenty-four hours, it grows harsh and choky; but it is very pleasant before it is too stale. This fruit lasts in season eight months in the year, during which the natives eat no other sort of bread kind." The Bread-fruit was introduced into our West Indian Islands in a second and more successful expedition under Lieutenant Bligh (the commander of the Bounty), but there it has not answered the expectations that induced the Government of the day to persevere in carrying out their well-meant project, as "the Banana or Plantain is more easily and cheaply cultivated, comes into bearing much sooner after being planted, bears more abundantly, and is better relished by the negroes."

The Bread-Fruit.

FERMENTING MATERIAL ON VINE BORDERS.

The well-known effects upon Vines of hot dung when applied as a lining to the border, led to the practice of heating Vine borders by means of hot-water pipes placed underneath the soil; but the latter plan, while by far the most expensive, has not been attended with anything like the success that was anticipated by its advocates; and some good Grape growers have not hesitated to condemn the practice altogether, as being unsafe and dangerous. Be this as it may, however, there can be no doubt that bottom heat or root heat is highly beneficial to Vines; they should have a root temperature at least equal to the mean temperature of the Vinery in which the Vines are growing, for the roots will stand a higher temperature than this with advantage. The only question is how to apply it advantageously. Late Vineries, started after the beginning of March, don't require much assistance in this way: but all Vines, and especially Muscats, started before this date do, more particularly if the roots are outside; and for this purpose there is nothing to match a good bed of litter and leaves. As yet no other plan of applying bottom heat has proved so successful, nor is there any other way, so far as I am aware, of restoring vigour to Vines that have been crippled through feeble root-action, and the best of Grape growers go back to the old plan now and then when all else has failed. Besides, the hot-bed is quick in its action. Vines can be improved in time by enriching the border and applying top dressings, &c.; but the hot dung induces action at once, and will often make a good crop of what would otherwise have been a very indifferent one. The explanation of this is simple. When a Vinery is started in January, let us say, the Vines, obedient to a natural law, burst their buds and come into leaf. The temperature is raised as growth advances, till the leaves and branches have probably a summer heat; while the roots have never had a temperature above 45° or 50°. Under such circumstances the roots always come away weakly from the beginning, the leaves are pale and thin, and as the disparity between the temperature of the roots and branches increases, the symptoms get worse—the leaves flag under a hot sun, the fruit sets badly, and the chances are that at the stoning period shanking or stoneless berries will be the result. Nothing else can be expected. A Pine-Apple plant treated in the same way is affected in exactly the same manner, the cause being nothing else than a want of reciprocal action between the roots and the branches.

Some cover the borders of their early Vineries to keep in the natural heat of the soil only; but this natural heat is not by any means enough when once the Vines begin to grow. The covering must be thick, and composed of materials that will ferment actively and continue to do so for awhile, if good results are expected. A few years ago I was consulted about some Vines about eighty years of age, that were in a bad way, not having borne much, if any, for several years before. They had been started generally about the beginning of February, and, further than a covering of dry leaves, no assistance had been given to the roots in the way of protection. Probably the best plan would have been to replant; but the houses were old and destined to be pulled down before many years, and meanwhile the object was to make the most of things as they were. So at pruning time the Vines were pruned back to the best eye, and in January a lining of litter and leaves was applied to the border which was all outside. When the Vines broke more litter and leaves were added, and the whole was turned and mixed thoroughly, which set fermentation agoing, raising the temperature of the dung to about 80°; and this practice was continued, keeping the heat of the dung up to 90° or 100°, as the season advanced, till July, when the Grapes were ripe. The first year the crop was light, but fairly finished, and the wood and foliage good—much better than usual. The next year the same practice was followed, with much better results, as the crop was a good one in every respect. Some of the bunches, indeed, were heavy, and figured successfully at more than one large exhibition in June of that year. For six years this practice was continued with equally good success, till the houses in their turn had to come down; the old Vines were not, however, discarded without reluctance. In removing the border afterwards, the effect of the annual covering of leaves and litter was very apparent; the roots of the Vines had come in crowds to the surface, every year taking possession, less or more, of the decayed litter, next to the soil, so that the gardener found it necessary to leave patches of the litter annually where the roots were thickest, which caused the border in the end to look quite uneven. Many similar instances might be given, but I will only give another and a more recent one. One of the Vineries here has been cropped heavily for a number of years. Last year the Vines showed symptoms of distress, inasmuch as the wood was weaker than before. As the crop must come up to time when wanted, I took measures in time by widening the somewhat narrow border outside, and, to facilitate root action, 18 inches of leaves and litter wheeled on to the border in February. The Vines were started about the middle of February, and the leaves, &c., were turned the first week in March, which raised the heat by fermentation to 95°, and this degree has been maintained up till now. The effect upon the Vines has been marvellous; their whole latent vigour seems to have been roused, as is evident from the disposition to grow strongly, even after the crop is swelling, and push out adventitious shoots from the main stem where no visible buds were before, and a thickening up of the young wood to nearly twice the diameter of the last year's wood, as shown by the excisions at pruning time. Now this is not due to the addition to the border, but simply to the stimulating effects of the dung heat, which has not been applied before, the house in question having been started late. Of course it must not be supposed that the soil of the border and about the roots of the Vines is as warm as the lining on the top. Heat descends very slowly, and when the litter and leaves are at 100°, probably the temperature of the border 18 inches below the surface will not be more than 70° or 75°; but a higher temperature than this after the Vines are fairly started will do no harm, and when the berries are swelling and approaching the stoning period, 80° or 85° will be safe. As to the economy of this practice, I would just say that leaves are generally plentiful about a garden, and, mixed with a third of litter, will generate plenty of heat, and the whole comes in as an excellent manure about midsummer for the vegetable quarters. J. S. W.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Time for Pruning.—The American *Practical Farmer* reports the results of experiments made at the Pennsylvania Experimental Farm, in sawing off limbs of Apple trees at different seasons of the year. It was found that the wounds healed most thoroughly and quickly when the limbs were cut off in June, or during the period of most rapid growth. Hence the inference that pruning should be done early in summer. But before this conclusion is adopted, it must be remembered that rapid healing is not the only desideratum in pruning. If the tree is feeble, and we want to increase its vigour, the pruning should be done early in spring. Amputating large limbs when the tree is growing checks it seriously. Summer pruning should therefore be performed on trees of thrifty growth only.

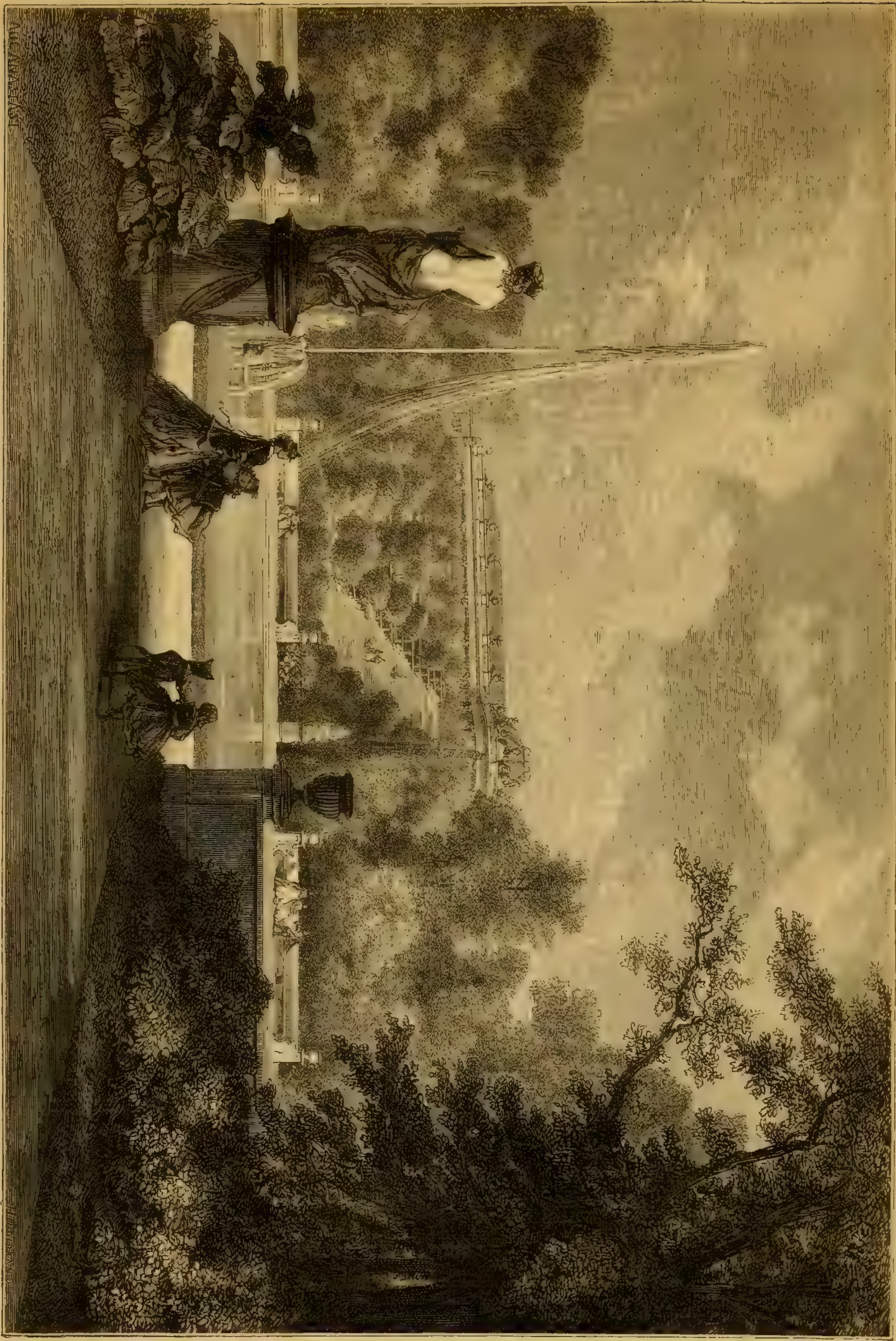
Fruit Trees as Fences.—One of the latest ideas about fencing is to plant trees for posts, and when they are strong enough, to string wires from one to another. The kind of tree is unimportant, but, of course, fruit trees will be more profitable than other sorts of trees. In places in which they would be much exposed, other kinds of trees might be planted for shelter.

Apple Blossoms.—There is a peculiarity in the flowers of Apple trees which I have not heard mentioned by observers or noticed in books. Each flower bud almost invariably produces a cluster of six flowers, one of which is a robust flower in the centre of the cluster, and this flower is nearly pistillate; in a circle around this are the five others which are more feeble and of a lighter shade of colour than the centre one; these five are nearly staminate, and drop off as the centre one matures into an Apple.—*New York Tribune.*

THE GARDENS AND PALACE OF SANS SOUCI AT POTSDAM.

The gardens and palace of Sans Souci have been called the Prussian Versailles, and, in some respects, they merit that title; for the decidedly French tastes of Frederick the Great, the patron of Voltaire, imparted to them a decidedly Versailles-like aspect. Sans Souci is, however, far inferior to its model, both in the size and magnificence of the palace, and the extent and profuse decoration of the gardens. Nevertheless, it possesses a certain grandeur of character, though on a comparatively miniature scale, which at once stamps it with the aspect of a truly regal seat, as will be seen by our engraving. With very little additional grasp of design, and a moderate extension of its limits southward, it might, indeed, have surpassed Versailles itself in one especial feature. That noble garden suffers greatly from the want of natural water *in situ*, while at Sans Souci, by enclosing a further portion of ground southward, as far as the banks of the Havel, which a hundred years ago would not have been very costly, the gardens of Potsdam would have commanded a picturesque and invaluable addition, which no amount of the most lavish expenditure could ever confer upon Versailles. The Havel, formed of branches both of the Elbe and the Oder, widens into lake-like reaches in the neighbourhood of Potsdam, and is studded with islands, and varied by far-jutting promontories, which render it extremely well fitted for the production of grand horticultural effects; so much so, that it appears really astonishing that neither the king's enthusiasm for gardens and gardening, nor the skill of the horticulturists he employed, should have entertained such a view of the capacities of the site of Sans Souci. Perhaps, however, the termination of the gardens a few thousand yards or so short of the Havel, is owing to the fact that this had been the boundary marked out by the Electors of Brandenburg, the predecessors of the great king, who made the old palace and garden of Potsdam their summer residence, a circumstance which, perhaps, induced Frederick to respect the limits they had established in that direction, whatever alteration in the enrichment of the palace in the French style he might cause to be adopted when he selected Sans Souci as his favourite summer retreat.

The transition from the dingy ugliness of Berlin, and the depressing sandy plains by which it is surrounded, to the green bosquets and pleasant fountains of Potsdam, is always agreeable; and, as the transit may be accomplished in forty-five minutes, five or six times a day, it is naturally a very favourite resort of the Berliners during the summer months, though they have the Thier-garten and the pretty grounds of Charlottenburg so much nearer at hand. The gardens of Sans Souci owe their splendour, and also their present name, to Frederick the Great, whose French taste and love of art and literature were joined to a very special love of gardening of all kinds, and to an ambition to emulate the glories of the famous gardens of Paris and Versailles—of the magnificence of the Tuileries, and of the vast artificial waters and fountains which Louis XIV. created out of the woods of his father's unpretending hunting seat. The gardens of Sans Souci are situated close to Potsdam, a town of 35,000 inhabitants, and which contains four other palaces with gardens on a smaller scale. The planting and sculptural decorations of the gardens of Sans Souci are, as stated, in the style of those of Versailles, as will be seen in our engraving, but having a certain North German primness which is entirely their own. There are numerous alleys, with low hedges scrupulously clipped to rule and square, both at sides and top, and other avenues, with trees of more lofty dimensions, topiated by clean martinet croppers to the very summit; but there are also certain parts of the grounds in which the trees and their foliage are allowed to assume their natural form of growth, which redeems the aspect of the general scene from its formality and stiffness. A broad, open walk, of fine effect, runs through the whole length of the gardens, only interrupted by a noble basin, from which issues the grand jet said to rise to a height of 130 feet. The basin is surrounded by statuary, vases, and stately marble seats, and forms a fine and conspicuous feature in the gardens. It is from this point that our illustration has been taken. The Palace of Sans Souci—constantly the summer residence of Frederic III. (whenever his summer abode was not



VIEW IN THE GARDENS OF SANS SOUCI.

in a tent in the territories of his enemies)—is approached by a flight of steps, interrupted by broad flats in the form of terraces, which produce an imposing and stately effect. The palace, however, is not remarkable, either for its architecture or its extent, being low, and but slightly altered by Frederic from its former condition; however, it is full of interesting memorials. Amongst other things is the now celebrated clock, which is regarded with almost superstitious veneration. The king had been accustomed to wind it up himself, but in the last days of his illness had been unable to do so, and it stopped at the precise moment of his death. The hands still point to the hour, having been scrupulously left untouched. Other matters of the kind possess a certain degree of interest, but having nothing to do with our main object—horticulture—must be passed over. The following anecdote, however, is somewhat to our purpose: The Prince de Ligne, a brilliant soldier, a wit, and an enthusiastic lover of gardening, being on a visit at Sans Souci, the king began to pour out to him his troubles as a gardener. Frederic complained that, despite all the care and skill of his gardeners, and his own personal attention into the bargain, neither his Melons nor his Grapes were fit for the table of a Parisian *bourgeois*, on account of the ungrateful sandy soil, through which all attempted enrichments percolated and disappeared. "Sad, indeed," replied the prince, "but at all events your majesty's *Laurels* thrive to admiration." Frederic took the utmost interest in his gardens, even to handling the spade himself on occasion, evidently enjoying the exercise. His Melons and Oranges were, however, the objects of his greatest care, not even excepting the Vineries; and he understood all the best principles of the practical gardening of that day, as well as his professional subordinates. He much wished to enlarge his gardens at the back of the palace, where his Melonries and Orangeries, as well as his kitchen gardens, were chiefly situated, and, for this purpose, gave orders for a certain mill to be purchased with its surrounding ground of a few acres. But the proprietor, a sturdy miller, declined to sell; and, it is pleasing to find that even in those days of almost pure despotism, there were private rights which could not be invaded with impunity. The king resorted to law, and after a protracted suit—the would-be purchaser being willing to give twice its value for the property—the judges pronounced in favour of the miller, and his Majesty submitted with a good grace—indeed, with a magnificent grace, making the miller a handsome present in honour of his courageous defence in a contest with royalty. A descendant of the independent miller getting into difficulties, offered at last to sell his encumbered property to the government, but the reigning monarch, instead of taking advantage of his position, relieved him from all his difficulties and reinstated him in full possession of the mill, in honour of his sturdy ancestor; and the mill is now considered a national monument, being shown to all visitors, who ought to know something of its story.

In view of the gardens, beyond the extremity of the great avenue, and nearly two miles from Potsdam, is the Neue Palais, built by Frederick the Great after the Seven Years' War, in order to prove that his finances had in no way suffered from the protracted contest. The works were carried on unremittingly during six years, from 1763 to 1769, and even then the interior was far from being completed, and the general result, as an architectural work, very unsatisfactory. The gardens at Sans Souci emulate Versailles in water-works, which play twice a week, and are furnished with an abundance of temples, porches, pagodas, and other architectural devices, not always in the best taste; but in one of them, called "the antique temple," is a statue, by Rauch, of the beautiful and unfortunate Queen of Prussia, which is alone worth a pilgrimage to Potsdam to see and to admire. Within the gardens of Sans Souci, is a villa in exact imitation of a Pompeian residence, and which, even to the baths, is intended for use as well as ornament. It was built by the late King when Crown Prince, whose love of art will be well remembered. In the suburbs of Potsdam are the summer residence of Prince Charles, on the Yung-Fern See, and the small palace of William I., known as Babelsberge, which is situated on a broad reach of the Havel. NOEL HUMPHREYS.

THE ARBORETUM.

VARIETIES OF THE COMMON YEW (TAXUS BACCATA).

As many of our favourite Evergreens, hitherto reputed hardy, have been seriously damaged or destroyed by the last winter's frost, we turn with increased interest to those which remain to us uninjured. Bays, Evergreen Oaks, Arbutus, Euonymus, Laurustinus, Common Laurels, Cypress, and in some cases Portugal Laurels, are killed. Araucarias, Deodaras, and some other South American and Indian beauties have in many places complexions as brown as ground Rhubarb; Phillyreas and more hardy Evergreens are stripped of their leaves. But our native plant, the common Yew, is safe; none of the varieties have a leaf injured in this valley of the Lea, where the thermometer on Christmas Day was five degrees below zero.

The common Yew is, no doubt, well known to every observer, but perhaps the numerous and beautiful forms which have descended from it are as yet strangers to the many. It is these varieties which I would now attempt to describe. They are many in number, beautiful in appearance, and vary greatly among themselves. Neat, graceful, elegant, picturesque, sombre-massive, grand, are terms which may be appropriately used to one or other of them.

It is my present intention to look at them from one point of view only, and that a popular one—their value as ornamental trees in garden scenery—and so regarded, they seem to fall naturally into four groups, viz.:—

Group 1.—Varieties of a spreading habit, of which the common Yew is the type.

Group 2.—Varieties of pyramidal or columnar habit, of which the Irish Yew is the type.

Group 3.—Varieties of weeping habit.

Group 4.—Varieties with variegated foliage.

GROUP I.—VARIETIES OF SPREADING HABIT.

T. BACCATA, common Yew.

T. B. FRUCTU-LUTEO, the yellow-berried Yew. This is one of the most elegant; the pulp surrounding the seed is of a dull yellow colour instead of red, as in the ordinary kind. The growth is vigorous; the leaves are of a very pleasing green medium tint.

T. B. NIGRA. This is a striking plant of bold and rather upright growth; the leaves are of a bluish or blackish-green. It flowers abundantly, and is very effective in the landscape, forming a somewhat sombre, but grand and massive tree.

T. B. PROCUMBENS, forms a huge spreading bush; leaves bright green, the plant, looked at as a whole, having a reddish appearance.

GROUP II.—VARIETIES OF PYRAMIDAL, OR COLUMNAR HABIT.

T. B. FASTIGIATA, the Irish, or Florence Court Yew, is a plant of rigid growth, columnar in form; leaves dark green. This plant is too familiar to require an extended notice, although very useful in formal gardening. Seeds of this variety produce for the most part the common Yew, but some vary in form and tint.

T. B. CHESHUNTENSIS is a very graceful variety, of pyramidal growth, the leaves small and closely set on the branches; the colour is of a bright glossy green. It appears to stand midway between the common and Irish Yew, but is less formal than the latter and grows twice as fast. This variety was raised by me some years ago, from seeds of the Irish Yew.

T. B. PYRAMIDALIS. This variety resembles cheshuntensis in outward form; the leaves are, however, broader and shorter, and the bark of the young shoots reddish.

T. B. NIDPATHENSIS, the Nidpath Yew, resembles cheshuntensis in the leaf, branch, and colour of the foliage, but is of stiffer growth, being columnar rather than pyramidal in habit, with a disposition to spread at the top.

T. B. STRICTA is similar to the preceding, but with smaller and paler green leaves; it is almost as erect as the Irish Yew, and forms a compact dense tree. This is a seedling from the Irish Yew, raised from the same batch as cheshuntensis.

T. B. NANA is a neat plant of dwarf habit, and compact upright growth; the leaves of a dark and more glossy green than the common Yew. It appears equally suitable for a single tree on the lawn, for planting in masses, for the shrubbery, or for a dwarf hedge in a geometrical garden. This also is one of my seedlings raised from the Irish Yew.

T. B. ERECTA is similar to the preceding, but of larger growth, although with smaller leaves.

T. B. ERECTA CROWDERI, the variety recently brought under notice by Mr. Crowder, of Horncastle, is of compact pyramidal growth, and approaches more nearly to erecta than to any other, but has smaller branches, and will probably not grow to so large a size. It appears of more regular growth than erecta, and may perhaps be considered an improved variety of it.

T. B. ERICOIDES (EMPETRIFOLIA) is an interesting and neat little plant of dwarf growth, closely set with branches; the leaves are small, the bark reddish.

GROUP III.—VARIETIES OF WEEPING HABIT.

T. B. DOVASTONII is a weeping variety, somewhat picturesque, the branches shooting horizontally to some distance from the main stem, and drooping at their points. The foliage is ample, of a dull dark green.

T. B. JACKSONII is a distinct and elegant weeping variety, with small light green leaves somewhat curled.

T. B. RECURVATA is a handsome variety, with leaves of a pale dull green. The habit is diffuse, rather drooping, the leaves curled in the way of Picea nobilis.

GROUP IV.—VARIETIES WITH VARIEGATED FOLIAGE.

T. B. VARIEGATA, the Golden Yew, is a well known plant of great beauty, well suited for planting in masses, and relieving the monotony of large surfaces of green. The gardens at Elvaston Castle derived some of their celebrity from the artistic working up of quantities of this beautiful tree in contrast with the darker shades of green. I have heard it said, on good authority, that the Golden Yew is a male plant, but as I have seeded it, I strongly suspect that there are two or more varieties of too close an external resemblance to be distinguished. This supposition is strengthened by the fact that the offspring from seed retain the variegation of the parent, though differing slightly among themselves.

T. B. ELEGANTISSIMA is paler in colour, and of more erect and uniform growth than the last-mentioned. Both these varieties, if grown entirely in the shade, quickly become green, but regain their golden appearance on re-exposure to the sun. They form handsome formal plants when worked standard high on the Irish or common Yew.

T. B. "SILVER VARIEGATED" is a seedling from the Golden Yew, but which I never thought sufficiently distinct or attractive to merit a name.

T. B. FASTIGIATA VARIEGATA, the variegated Irish Yew, is a sport from the Irish Yew, with occasional silver leaves. The plant is of slow growth, and still scarce, but it is hardly striking enough to become a general favourite.—*William Paul (Waltham Cross), in "Proceedings of Royal Horticultural Society."*

The Black Walnut.—Within the past half-dozen years this tree has attracted considerable attention, owing to the high price of black Walnut lumber. A man who expects to sell timber of his own raising would need to commence planting quite early in life, for the trees are not available for this purpose until they reach a large size. Still, as the world goes, men usually try to lay up money for their children, and a forest of this tree would be as safe an investment as bank stock, and not half so likely to be tampered with by unscrupulous officials. As the black Walnut is excellent timber for other purposes besides sawing into boards to be used for furniture, a man could plant a forest, cut out and use the small trees from time to time as wanted for fuel, posts, and rails, and leave the remainder to grow into large trees. The tree is very hardy, and grows rapidly on soils rich in vegetable matter.—*Tribune.*

Oak and Ash.—The old tradition is given in this month's part of the *Book of Phrase and Fable* (Cassell & Co.) as follows: "If the Oak gets into leaf before the Ash we may expect a fine and productive year; if the Ash precedes the Oak in foliage, we may anticipate a cold summer and unproductive autumn. In the years 1816, 1817, 1821, 1823, 1828, 1829, 1830, 1838, 1840, 1845, 1850, and 1859 the Ash was in leaf a full month before the Oak, and the autumns were unfavourable. In 1831, 1833, 1839, 1853, 1860, the two species of trees came into leaf about the same time, and the years were not remarkable either for plenty or the reverse; whereas in 1818, 1819, 1820, 1822, 1824, 1825, 1826, 1827, 1833, 1834, 1835, 1836, 1837, 1842, 1846, 1854, 1868, and 1869 the Oak displayed its foliage several weeks before the Ash, and the summers of those years were dry and warm, and the harvests abundant." In the latter category, there are five famous vintage years. This year the two kinds of trees budded almost simultaneously.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Rhododendron Falconeri.—There is a fine specimen of this now in flower at Cobham Park, the seat of Mr. Coombe. The leaves are 15 inches long, and it bears five heads of its huge cream-coloured blossoms.—I. F. M.

The Great Guelder Rose (Viburnum macrocephalum).—This noble shrub may now be seen in perfection at the Botanic Gardens, Glasnevin, literally covered with large trusses of its snow-white flowers. It is planted against the wall of one of the greenhouses, outside, and never receives any protection. It is a most useful plant where cut flowers are in demand, and should be more extensively cultivated, if only for that purpose alone.—*Gardeners' Record.*

THE PROPAGATOR.

THE FERTILISATION OF THE YUCCA.

In his fifth annual report on the "Noxious, Beneficial, and other Insects of the State of Missouri," Mr. C. V. Riley, the State Entomologist, remarks that many plants are pollenised by the wind, but by far the greater number are rendered fruitful by the action of insects. Mr. Riley uses the Asclepias as a familiar example of a plant which may have several pollenising agents among insects. In plants of this genus, each of the flowers which form the umbel is so constructed that the pollen masses can only come in contact with the stigma by artificial means. These pollen masses hang by a bent stalk (see Fig. 1, which represents a pistil of Asclepias bearing pollen masses), attached to a flattened, ovoid, brown organ, having a cleft which catches the claws or tarsal hairs, or the fine hairs surrounding the trophi (instrumenta cibaria), of insects wandering over the umbel. The Yuccas, so far as Mr. Riley has been able to ascertain, in the United States, depends on the attentions of a little Tineid which he has named Pronuba Yuccasella—at least he says that such is the case with capsule-bearing species, those with dry dehiscent pods. His own observations have been made upon a filamentose species growing near St. Louis, assumed to be Y. puberula or glauca. Mr. Riley's attention was first drawn by Dr. Engelmann to the fact that plants of the genus Yucca must be fertilised by the agency of an insect. It appears that the sagittate anthers open a little earlier than the perianth and expel the pollen grains, which, being glutinous, remain attached in different sized bundles to the inside of the flower. The stigmatic tube contains nectar, and is connected with the ovarian cells, and the pollen must be introduced into the tube, but cannot be so introduced without artificial aid. Mr. Riley has found several insects frequenting the Yuccas about the flowering time, some eating the pollen, others the young fruit, while others again content themselves with sucking the juices from the ripening capsules; but the only insect he has discovered engaged in pollenation is the little Tineid, the Pronuba, which may henceforth become popularly known as the Yucca Moth. The following is the technical description of the Pronuba Yuccasella given by Mr. Riley from an examination of 9 males and 15 females (see *b* and *c* in Fig. 2.) Average expanse, female 1 inch; male 0·90 inch. Front wings, above, uniformly silvery-white, the scales loosely set; fringes concolorous; beneath, pale fuscous, with a brassy reflection; paler internally; fringes either concolorous or paler; costa with a brush of dark hairs. Hind wings semi-transparent, pale fuscous both above and below; paler internally; the fringes white and the brush on shoulder dark. Head white; antennæ and tongue dingy yellow; maxillary palpi of same colour, with the exception of tentacle, which is darker; labial palpi with scales on second joint dark brown above; eyes black. Thorax white. Legs dingy yellow, more or less covered with pale scales. Abdomen with the terminal joint in female always bare, with the exception of a few short, stiff hairs near tip, and the scales on other joints very loosely attached.

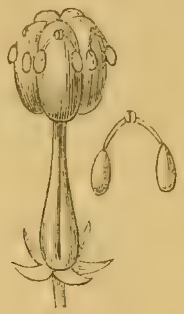


Fig. 1.

During the daytime the moth may be found resting with folded wings (*b* fig. 2) within the half-closed flowers, but a keen and careful search is necessary, as the insect is hidden and protected by the similarity of the colour of its front wings and that of the flower. In the evening, when the Yucca is in full bloom, the male moth may be seen flitting from flower to flower, and by the aid of a bull's-eye the female may be found busily at work. She seems to be thoroughly aware that to secure the continuance of her race she must ensure the fruiting of the plant which furnishes her larvæ with food. "With her maxillary tentacle, so wonderfully modified for the purpose," says Mr. Riley, "she collects the pollen in large pellets, and holds it under the neck and against the front trochanters. In this manner she sometimes carries a mass thrice the size of her head. Thus laden, she clings to the top of the pistil, bends her head, thrusts her proboscis into the stigmatic nectary, and brings the pollen mass right over its mouth. In this position she works with a vigour that would indicate combined pleasure and purpose, moving her head and body from side to side, and apparently making every effort to force the pollen into the tube." Thus far the habits of the little insect have been frequently observed, but for want of time and opportunity Mr. Riley has not yet been enabled to witness the act of ovipositing. He feels satisfied, however, that the eggs are not deposited on the outside of the fruit; but are either thrust into it from the side or from the stigmatic opening, following very likely the course of the pollen tubes. Up to the present he has not yet been able to discover the egg *in situ*, which is explained by the fact that the egg when examined in the abdomen of the female is found to be long, narrow, soft, flexible, and of the exact colour of the flesh of the young fruit. The ovipositor is so fine and extensile that it may be thrust into the most minute opening. A day after the flowers have withered, the larvæ, from one to half a dozen, may be found in the nascent seed, but so similar in colour that they would be difficult to detect, were it not for their comparatively large and dark jaws. The larva remains of a white colour till after the last moult, when it puts on the carneous tints usual amongst fruit-boring moth larvæ. The following is the technical description of the larva, founded on the inspection of many specimens:—Average length, 0·55 inches. Broadest on thoracic joints, thence gradually decreasing to extremity, which is quite small (fig. 2, *a*). Colour carneous, with a paler greenish tint below. No piliferous spots, but a few very minute and short stiff hairs springing from the ordinary positions of such spots. A transverse dorsal wrinkle on each of the principal joints, more or less distinctly divided in two by a medio-dorsal depression, which is sometimes slightly bluish. Joints deeply incised and with a lateral, substigmatal, longitudinal wrinkle (*d*). Thoracic legs stout, but short, with three joints and a claw. No prolegs. Stigmata (nine pair) forming a small rufous circle on anterior portion of joints, 1 and 4-11. Head (*e*, *f*, *h*, *i*, *j*, *k*) partially retractile, copal-coloured; labrum slightly pilose; mandibles stout, rounded, and with four acute teeth, each diminishing in size from without; maxillæ with the inner lobe rounded and furnished with (usually two) short fleshy hairs, the palpi four-jointed, the terminal joint with bristles; labium prominent, with the spinneret conspicuous and the palpi two-jointed—the first joint long, with a fleshy hair at tip, the second small, spherical, and also terminating in a fleshy hair; antennæ two-jointed, the terminal joint with a bristle; ocelli pale, around a dark crescent. Cervical shield flattened and not well defined. White when young. Mostly curved in the fruit.

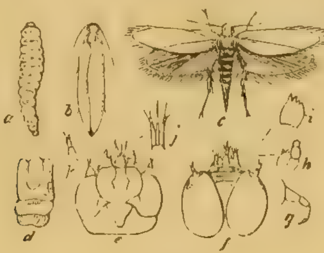


Fig. 2.

Each fruit-pod of the Yucca contains upwards of two hundred seeds, disposed in six rows, and, as it is seldom that two larvæ are found in the same row, and very rare that each consumes the inside of more than twenty seeds, it will be understood that abundance of seed is left to perpetuate the plant, especially as the Pronuba deposits as a rule only two eggs in each pod. It is possible that the moth may in some instances introduce the pollen without depositing eggs, but Mr. Riley says that, after examining many hundreds of capsules obtained from different parts, not more than 5 per cent. were uninfested. Sometimes every pod on a plant had its tenants, whilst at others half the pods on a panicle would be free from them. Oviposition, he thinks, follows naturally and immediately upon fertilisation, unless the moth happens to be disturbed.

When the larva is full-grown it bores a hole through the capsule, drops by a thread to the ground and burrows a few inches beneath the surface, where it makes an oval cocoon of earth lined with silk, and hibernates in that state, rapidly completing its transformations about the time when the Yuccas begin to bloom, its chrysalis existence being very brief.

Such is the life-history of what must be acknowledged to be one of the most interesting of all insects—an insect only recently noticed, and yet whose operations, taken in connection with certain theories might very well form the subject matter of a whole volume.

Mr. Riley expresses the belief that wherever the Yucca has seeded the Pronuba has been present, and he thinks it not impossible that the larva has been carried with the seed. It is quite certain that it may be transported long distances in the cocoon. Of seventy plants in a garden at Kansas City not one has ever produced seed, nor have others at Salem and Cambridge, Mass. In cases where the plants have yielded seeds Mr. Riley contends that the Pronuba may have been present without being noticed, a proposition not by any means difficult of acceptance, seeing that the insect has so long been unknown to botanists and entomologists. It would be interesting to learn whether there is another insect provided by nature to assist in fertilising the Yucca when removed from its native habitat, or whether, as may be the case in some very exceptional instance, the plant is enabled by some spontaneous alteration of structure to fertilise itself.

THE KITCHEN GARDEN.

THE POTATO DISEASE.

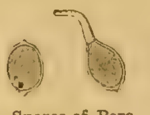
BY WILLIAM CARRUTHERS, F.R.S.

There is reason to believe that the Potato disease has been known for ages in the western countries of South America; but its first ascertained appearance was just thirty years ago, when it seriously injured the crops of the United States and Canada. It reappeared in the same regions the following year (1844). In the latter half of the month of July, 1845, it was first detected in the Old World, in Belgium, and within two months thereafter its occurrence was recorded in England, Ireland, and Scotland, in France and Germany, Denmark and Russia. Since that time it has never been entirely absent from the Potato crops, although in some years it has been much more destructive than in others. Its extensive prevalence last season, and the serious havoc it committed, threatening a famine in some districts of Ireland, have drawn special attention to it recently, and have induced the President of the Royal Agricultural Society (Earl Cathcart) to encourage the investigation of the nature of the disease by the offer of a prize of £100, in the hope that such investigation will lead to practical suggestions as to a method of palliating, if not of curing, the malady.

With the approval of the Botanical Committee, I have drawn up the following short statement of the present state of knowledge regarding this disease:—

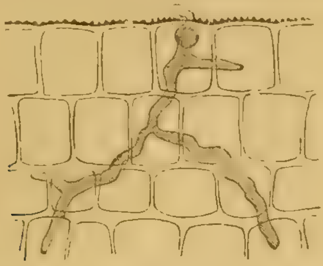
There is no longer any dispute as to its real cause. All the notions which supposed it to be produced by physical agencies, or to be the indication of a defective method of cultivation, or of a deterioration of the plant, have been conclusively set aside. Nor can it be held that the microscopic fungus, which is known to be invariably found in diseased Potatoes is the result of the disease and not its cause, since De Bary has produced the disease by placing the spores of the fungus on the leaves and tubers of healthy Potatoes.

Beginning this narration with De Bary's experiment, we may trace intelligently the history of this baneful parasite, and notice the nature and progress of the injury it produces in the Potato. The seeds, or more properly spores of the fungus, are minute ovoid bodies, so small that the greatest diameter is not more than the eight-hundredth of an inch long. When a spore rests on the under surface of a leaf, and there is sufficient moisture, it pushes out a slender tube, through a ruptured opening in its coat. This tube penetrates the epidermis on the spot where germination takes place or finds its way to one of the innumerable openings or stomates which abound on the lower surface of the leaf, and passing through the opening enters the tissues. The slender tubular root, called the mycelium, rapidly grows, pushing its way everywhere through the substance of the leaf. It branches and rebranches freely; the brown colouring matter contained in it gives the spotted appearance to the leaves, which indicates to the eye the existence of the disease. The mycelium sends out, through the stomates, branches into the air, that give a mouldy aspect to the under surface of the leaf. The ultimate

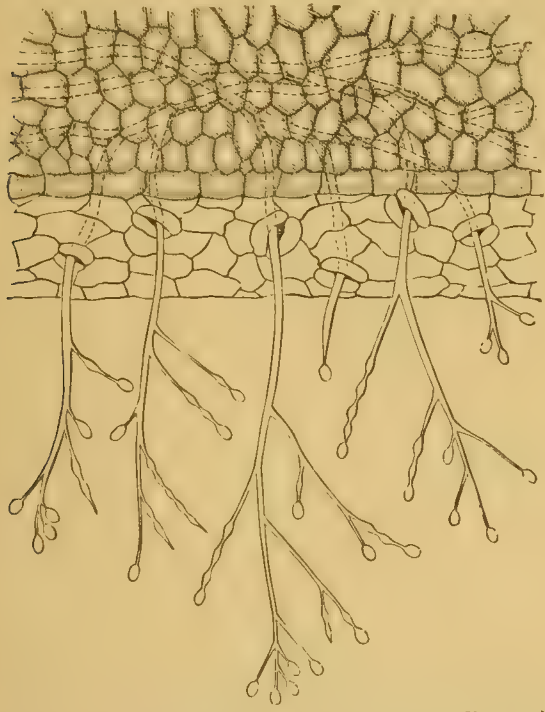


Spores of Peronospora infestans, magnified 300 diameters. One of the spores germinating.

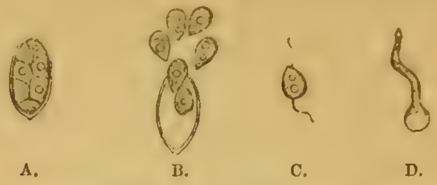
branches of this external growth are somewhat interruptedly swollen, and many of them bear minute oval bodies at their extremities. These are the spores. The mycelium passes down the leaf-stalk into the stem; through this it obtains access to the other leaves as well as to the underground branches, and through them to the Potatoes themselves, which are indeed only enlarged and shortened portions of the underground stem. De Bary placed some spores on the leaves of a healthy Potato on February 4th; the day following the tubes of the mycelium had penetrated the leaves; on the 8th the mould appeared on the under surface, covered with fruit, and on the 9th the whole plant was diseased.


A spore which has penetrated the epidermis of the stem of a potato, with its mycelium root penetrating the tissues of the stems.

The individual cells which are pierced by the mycelium are destroyed, and the starch-granules contained in the cells are attacked and consumed. Putrefaction soon begins, affecting first the cell-walls and then the starch. Payen has put it beyond doubt that the mycelium consumes the starch, for in his investigations he detected the granules attacked by the mycelium threads, and he made the injury more apparent by using iodine, the action of which in colouring starch granules is well known. By the ordinary processes all the starch can be separated from diseased Potatoes, not only that contained in cells yet untouched by the mycelium, but even the granules that remain uninjured by the mycelium or the surrounding putrefaction.


Spore-bearing mould, Peronospora infestans (magnified 300 diameters). The spore-bearing mould springs from the mycelium, which penetrates the tissues of the leaf, and passes through the stomates on the under surface into the air.

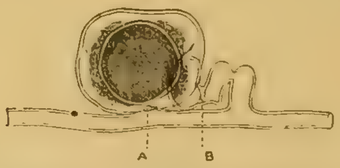
The mycelium does not naturally fruit on the upper surface of the leaf, on the stem, or on the tuber of the Potato, as these parts are either destitute of stomates or but partially furnished with them, and the mycelium does not send its fruiting branches through continuous epidermal structures; but when any of these parts of the Potato, attacked by the parasitic fungus, are cut and placed in a moist atmosphere, the fruiting branches speedily appear.



Spores of Peronospora infestans. A. Large spores borne on the mould of Peronospora infestans; the contents of the cell divided. B. The small spores (zoospores) escaping from the cell. C. A zoospore with its two cilia. D. A zoospore deprived of cilia, and germinating. (Magnified 300 diameters.)

Some of the oval heads which terminate the branches are larger than the others, and contain within them from six to sixteen minute bodies. When water is applied either artificially or naturally, the outer covering bursts and the contents are liberated. Each of the little spores thus set free moves about in the water by the aid of two cilia. In a short time the motion ceases, and if a proper nidus exists the spore germinates.

The minute fungus belongs to the genus Peronospora, and has received the name Peronospora infestans, Mont. Another method of reproduction has been noticed in other species of this genus, but it has not yet been detected in the case of the species causing the Potato disease. In the other species the mycelium buried in the tissues of the supporting plant produces two kinds of cells, which have the same relation to each other that the ovule and the pollen grain have in flowering plants. The small cell, representing the pollen grain, when it comes into contact with the larger cell, pushes out a tube which penetrates its outer wall, and on reaching the inner wall induces changes which produce a ripe spore, called an oospore. The oospore is full of small granules, which are liberated, as in the fruit already described, on the application of water, and being furnished with cilia they move about for some time. Although these minute spores abound on and in the soil around the diseased plant, it appears that they never attack healthy plants through their roots, but that they attach themselves to the stems or leaves, penetrating their epidermis or pushing their way through the stomates.



A. Oospore of Peronospora umbelliferarum, Casp. B. Small antheridian spore. (Magnified 300 diameters.)

It is to be hoped that the investigations on these fungi which will be undertaken in consequence of the offered prize, may lead to the discovery of these oospores in the Peronospora of the Potato. As they are more especially rest-spores, supplying, along with the mycelium, the means of continuing the life of this species in a new season, their discovery and the determination of the part or parts of the plant in which they are produced may supply practical hints as to how to prevent the disease. Under any circumstances, however, and in order to secure the destruction of the parasitic fungus, the diseased plants—whether leaves, stems, or tubers—should be destroyed by fire. Leaving them to decay on the field, or neglecting them in the farmyard and permitting them to get into the manure, is a certain means of maintaining these rest-spores (oospores) and mycelium in a state ready to germinate when the necessary conditions are present.

It is further probable that when we have discovered the oospores in the Potato fungus, which are known to exist in the other species of Peronospora, we shall not even then have ascertained the whole life-history of this parasitic fungus; for the recent investigations of De Bary have shown that many of the microscopic fungi, which have hitherto not only been considered different, but have been classed under different groups, are really stages in the life of the same plant. In the analogous changes in the higher cryptogams, the spores are produced only at the final stage; and among the different forms through which insects pass, only the imago or perfect insect has the power of continuing the species by producing eggs. But in these fungi each stage is spore-bearing. The investigations instituted for the offered prize may, it is to be hoped, disclose some stage in the progress of this parasite's life, where it can be more effectually dealt with than in that stage with which we are at present acquainted.

De Bary has shown by experiment that there is nothing in one Potato plant more than in another to predispose it to the attack of the fungus. It is not weak or unhealthy plants that are attacked, but wherever the spores rest, and, finding the suitable moisture, germinate, there the disease will appear. When once the fungus has got a footing in a crop of Potatoes, its rapid growth, the little time required to develop fruiting branches, and the innumerable number of spores produced, make its progress very rapid. Even when the disease is first noticed by the cultivator, it has taken such a hold of the crop that its cure is, I believe, impossible.

As moisture is so necessary to the development of the spores, every means should be adopted to prevent undue moisture. No soil is exempt; but there is less danger of an attack, and less injury when the disease makes its appearance, in thoroughly drained soils.—*Royal Agricultural Society's Journal.*

ANGELICA.

If not a British plant (as some suppose), I have seen it growing wild and most luxuriantly in several places, more particularly in Devon; and, about this place (Exmouth), it grows on the high banks, under the cliffs, high up on the shelves and crevices, and on the top of the cliffs most luxuriantly. Owing to its winter and very early season's growth, with its clean, shining foliage of such a beautiful green, and its very early flowering, it really makes a very handsome and interesting plant for the wild garden, nooks of shrubberies, and wood-side walks. With us it commences its growth in autumn, grows on the whole of the winter while the weather keeps open, commences starting its flower-stalks in February, and is in full blossom early in March. It grows from 3 feet to 4 feet 6 inches high, and is really a very interesting sight, with its fine foliage, luxuriant stalks, and large heads of bloom, as seen here in the Primrose-blooming season, and before even the wild Parsley is in bloom. It is more used in confectionery than otherwise; yet many like to have a bed of it for the sake of its appearance, and it grows very well on almost every kind of garden soil—best in those that are moist and deep. It is readily propagated from seed, which should be sown thinly in early autumn (August or September), or in spring; and, as it is a very strong grower, each individual plant should have plenty of room to grow—3 feet apart will not be too much. It should not be allowed to go to seed, unless in the uncommon case of seed being required. It is stated to be a biennial in the gardening books; but we have found it endure from year to year, like any common perennial. It would be more likely to exhaust itself if allowed to flower. The stems, if required for candying, should be cut down in May. In the north of Europe it is used as a vegetable and condiment, but in this country chiefly for confectionery. James Barnes.

BORAGE.

"Ego Borago gandia semper ago," which, being interpreted, signifieth that "I Borage bring alwaies courage;" and, as an old writer pithily remarks, "Pity it were that even a fictitious expellant of the blue devils should become obsolete; better even to be cheated into good spirits than suffered to sink into melancholie for want of a little credulity." Burton, in his "Anatomy of Melancholy," tells us that

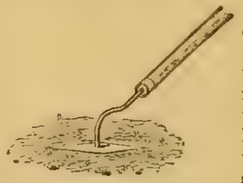
Borage and hellebore fill two scenes,
Sovereign plants to purge the veins
Of melancholy, and cheer the heart
Of those black fumes that make it smart.

And our prime old favourite Gerarde relates for our edification: "Those of our time do use the flowers in salads, to exhilarate and make the mind glad; there be also many things made of them, used everywhere for the comfort of the hart, for the driving away of sorrow, and increasing the joie of the mind." Borage is very abundant in the South of Europe, the Levant, and middle Asia. In the neighbourhood of Aleppo it grows so abundantly as to be quite a feature in the landscape; and, what renders it the more noticeable, the flowers there are larger and more intense in colour than with us. It is indigenous to England; its favourite localities are hillsides, and waste places amongst rubbish. If the reader is going to the seaside next autumn and should choose Southsea, let him, one fine afternoon, take the train to Cosham, walk up Portsdown Hill, and he may return home rich with borage for his cider cup and copas. In the days of good Queen Bess, both the leaves and flowers were eaten in salad, and the Borage, with other herbs, was gathered for store, as well as for present use; the dried plant received its meed of praise, for it kept "seeming and savour all the winter long." I am told the young leaves form no bad substitute for Spinach. Some old-fashioned people still use it with honey as a gargle, and in France it is occasionally given for rheumatism and skin-diseases, with what success the writer knoweth not; and a green colour is made from the flowers. The leaves contain a considerable quantity of nitre, which may be proved by holding a bit of the dried plant in a flame. The burning will be accompanied by slight coruscation and detonation, hence the cooling properties of the plant. I will hazard an opinion that this is the secret of its curative effects in sore throat, &c. The root is employed in making rouge; the tissues of the plant contain gum, and may be used as a demulcent. Borage you see is, or might be, a very useful "weed," good for something else than cider cup. The bees are particularly fond of it; around its blue blossom they love to congregate, and if they do not find it at home, are apt to wander in search thereof, far and wide—many, alas! never to return; or if they do reach their quarters, die from fatigue on the threshold of their hives. So all ye apiarians cultivate Borage.

With regard to its culture, that is not very difficult: the seeds should be sown nine inches apart, and the sowing may be in spring or August. If the leaves only are to be used, the flower stems should be cut out as soon as they form, the plant will then continue forming leaves successively for three or four months. Leave a plant or two to ripen for seed in your herb garden, and self-sown plants will spring up in abundance. The young plants bear removing, and once introduce the Borage, for a few years you will have little trouble in growing sufficient for your use, and for the bees likewise. At the end of three or four years, however, you will do well to shift your ground and sow fresh seed. Borage makes an excellent manure, and has been sometimes sown in the spring for that purpose, and dug in during autumn. W. A. R.

A NEW AND USEFUL HOE.

A glance at our little illustration will show that this is a kind of scuffle hoe, working backwards and forwards. It will be seen that it is diamond shaped, the points or angles to the right and left being most efficient in plucking a weed out of a corner, or when situated close to a plant. It is worked in the same way as one would use a Dutch hoe. It leaves the ground remarkably level, and can be worked with much greater expedition than the common hoe; indeed, with a large one, nine inches wide, a wonderful amount of work can be got over in an hour or two, and with a five-inch hoe of this make 150 yards of 4 feet wide border have been hoed over in less than an hour. One trial of it, in short, is all that is wanted to establish its utility. A. D



Potato Imports.—So smoothly run the wheels of trade in these latter days, that our markets are but little affected by the fortunes of seasons and crops. A striking instance has occurred, during the last few months, in the matter of Potatoes. I suppose the farmer and the gardener could tell a melancholy story of last year's harvest of this valuable root; but what do the general public, who have eaten Potatoes every day for twelve months just as if nothing had happened, know about the calamity? Practically, the consumer has experienced no particular difference between this year's supply and last; but I have a few figures before me demonstrating a difference. They are the Board of Trade's statistics of imports, and they tell me that in just the four months from the 31st of last December till the 30th of April, instead of importing foreign Potatoes to the value of about £79,000, as we did in those four months last year, or to the value of less than £14,000, as we did in the first four months of

1871, we have actually spent £1,300,000 this year in the purchase of our neighbours' Potatoes. That we should have bought all these vegetables wherever we could get them, to supply our own deficiency, is not wonderful, for the English are accustomed to go to the foreign market with their money in their hands, and to obtain what they want if the article is to be had; but that such an enormous increase of supply should be available on an unforeseen emergency, and that we should have taken them and have eaten them as we have, hardly knowing the difference, is surely remarkable, and a splendid testimony of the elasticity of our commercial system.—*Gentleman's Magazine.*

Fertilisers in wet and dry Seasons.—The *Boston Journal of Chemistry* says: One of the most interesting facts which this extraordinary wet season has brought out is that fertilisers applied to soils in dry summers without appreciable effects, are rendered available in those that are wet. The plots upon which our fertilisers have been applied during the past years, when the rainfall has been so deficient, produced wonderfully this season. The fertilising substances have been lying dormant in the soil for the want of water to render them soluble, or to hold them in solution, and this year the conditions have been favourable for promoting the changes, chemical and mechanical, necessary for plant food to be made available. Manures are not lost which do not act promptly, unless they are blown away by winds, or are washed into brooks in sudden and violent showers, which sometimes fall upon the baked earth in summer. If they remain in or upon the soil, favourable seasons, which are sure to come, will force them to give up to plants the food which they contain, and the husbandman receives his returns in abundant crops.

The Nature of Guano.—It is a generally received opinion that the deposits of guano are exclusively the excrements of birds. Dr. Habel has investigated this matter microscopically and chemically, and has found that after treating the substance with an acid, the insoluble residue is composed of fossil sponges and other marine animals and plants precisely similar in constitution to such as still exist in those seas. The fact, too, that the anchors of ships in the neighbourhood of the guano islands often bring up guano from the bottom of the ocean, is quite in opposition to the prevalent belief. Dr. Habel therefore considers that the deposits of guano must be the result of the accumulation of fossil plants and animals whose organic matter has been transformed into nitrogenous substance, the mineral portion remaining intact.

Early Peas.—I sowed some Peas in a sheltered border in November, and made successional sowings every month since that time; but, although I have a fair prospect of good crops, I shall not gather Peas before the 21st or 24th instant—not even from my earliest sowings. I am not, however, alone in my misfortune, for my neighbours complain that their crops are equally late. I have, however, partly overcome the difficulty in the following way:—In the end of January I sowed around the inside of some 6-inch pots some Peas, grew them on slowly in moderately cool pits, and in early April transferred them to a well-sheltered wall border having a S.S.W. aspect, just turning the balls out of the pots, and opening them out so as to have the Peas in a line without breaking the soil any more than I could help. The result was that, on the last day of May, I gathered a dish of good Peas, and the plants have borne a good crop of usable Peas since.—J. A. H., *Twickenham.*

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Asparagus.—It is stated by "A." at p. 425, that the late Mr. Ingram showed a bundle of 100 Asparagus heads weighing from 16 to 18 lbs. That is a mistake; I weighed the bundle myself, and its exact weight was 12¼ lbs.—Charles Marr, *Royal Gardens, Frogmore.*

Hedges for Exposed Kitchen Gardens.—If the garden be exposed to cutting winds, hedges must be run through it at proper distances—the distance must be determined by the size of the garden—the hedges should be about 3 feet high, to consist of Beech or Privet, with Sweet Briars alternately, and here and there a China Rose to take off their stiff appearance.

Hardiness of the Potato.—The assumption that individual Potato plants vary as to hardiness, is not borne out by facts. That constitution has little to do with the matter is proved by the fact that in numerous instances after the frost of the 20th I found that where two stems issued from one root, one was quite frosted and the other unhurt. We must therefore look to some other source for an explanation of the matter, than that which supposes that Potato plants of the same sort differ from one another in constitution.—Alex. Dean-

Arresting Decay in Potatoes.—Prof. Church, of Cirencester, the eminent agricultural chemist, announces that sulphite of lime appears to exercise a very remarkable influence in arresting the spread of decay in Potatoes affected by the Potato disease. In one experiment the salt was dusted over some tubers, partially decayed from this cause, as they were being stowed away. Some months afterwards the Potatoes were found to have suffered no further injury. A similar trial with powdered lime (carbonate) proved to be much less effective.

WORK FOR THE WEEK.

PRIVATE GARDENS.

Flower Garden.—Spring blooming plants must now be removed from flower beds, for if that operation is longer delayed the bedding plants will be very backward. Collinsias, though at their best, must nevertheless be removed. Divest Daisies of their blooms, lift them, and transplant them in a cool border. Pansies are yet quite gay, and if plenty of young growth is left in them they will continue to bloom well where they are during the summer, or they may be lifted carefully and transferred to herbaceous borders or the reserve garden. Alyssums Arabis and Aubretias should be removed and transplanted in a cool border; the best of their young shoots should be used for cuttings, which may be inserted in a north-wall border, under handlights or mats for a time. Tulips, Hyacinths, and Crocus roots when lifted should be allowed to become thoroughly dry before they are stored away till the autumn. Remove all flower shoots from the variegated variety of Polemonium cœruleum, Cerastium, golden Feverfew, Stachys lanata, the variegated variety of Spiræa Ulmaria, Garden Cress, and, indeed, from any other kind of plant used chiefly for the beauty of its leaves. In order to prolong, or rather to retard, the blooming period of Antirrhinums, and that of the double-flowering Feverfews, cut over their flower spikes just now, and they will bloom later in the season. Transplant young plants of Canterbury Bells, Wallflowers, and other biennials, and to such as are flowering give a soaking of manure-water. From Pæonies and choice Rhododendrons remove all decayed flowers and seed-pods. Thin the shoots of Penstemons and Phloxes, leaving only such as are likely to flower well. Pick off blistered leaves of Roses, and on the first appearance of aphides syringe the plants with tobacco-water if they are not in bloom, but if their blooms are open use clean water only. Budding of roses may be commenced as soon as the eyes are prominent enough. Stake Hollyhocks and Dahlias. Sow annuals for late flowering, and thin out those previously sown. Peg down Fuchsias, Heliotropes, Petunias, Verbenas, some of the straggling Pelargoniums, Mesembryanthemums, and others, so as to keep the beds in which they are planted neat and orderly.

Greenhouse Plants.—Keep plants of Begonia Weltoniensis in a moderately warm house near the glass; they will soon be nicely in bloom. Other herbaceous and fine-leaved sorts are now in good condition. Pot on seedlings and cuttings as they become fit for removals but do not syringe them. Achimenes may be increased by means of young shoots, in the same way as Verbenas. Gloxinias and Gesnera; should not be syringed, as they are exceedingly liable to spot. Re-pot Musas raised in spring from seed, and separate and pot suckers when the old plants show signs of decay. They require good soil, plenty of root-room, abundance of water, and a strong, moist temperature Of Abutilons have a good stock to mix with other plants—one called A. niveum aureum marmoratum has large finely-spotted leaves, and is very ornamental. Plenty of heat and water are necessary to bring them to perfection, after which they should be hardened off for use in the conservatory. Re-pot young plants of Clianthus Dampieri that are in want of that attention. Some elevate the soil about the necks of the plants to the same height as that of the rim of the pot; others place a layer of powdered charcoal about their necks; and some feed the plants with water only from saucers placed underneath the pots, so liable is this plant to damp off. Of Ficus elastica, young plants should be plunged in bottom heat and kept growing; and, where increase of stock is required, larger plants should have an incision made at the base of a leaf some 2 feet from the end of the shoot, and some Moss and sand, or Peat and sand, should be tied around the wound. This induces the production of young roots; and, after a time, the limb may be entirely separated; thus an entire plant is secured in a short time. Grow on Cockscombs, and other Celosias, and keep them near the glass. Gomphrena globosa may be treated in the same way; but it should be used very carefully, as it is apt to damp off. Balsams are better grown in a cool airy house than drawn up in heat. Of Amarantus salicifolius secure good plants for conservatory decoration, and grow them in a light and airy house. Pinch and keep in good shape Coleuses, Iresines, &c. Agrostis pulchella and nebulosa are both pretty plants when mixed with others; therefore, keep up a succession of them in cool pits or frames. Shift regularly Zinnias, Tree Mignonette, Asters, and similar plants, for indoor decoration; and liberally feed Crysanthemums and Liliums, both of which may be grown in pots, either in frames or out of doors.

Hardy Fruit Garden.—Remove blistered and curled leaves from young fruit-trees, and search for grubs, which must be handpicked and destroyed. Train out the young shoots of Peach, Nectarine, and Apricot trees. Cherries are now beginning to ripen; therefore, some means must be taken to protect them from birds. Give Strawberries a good soaking of manure-water, and have nets or boys to prevent birds from devouring the fruit.

MARKET GARDENS.

Vegetables are excellent this season, but fruit crops are not so promising as they were some weeks ago. Some Pear and Plum trees have no fruit at all on them, whilst others are bearing a fair crop; Cherries and Apples are moderately good, Gooseberries and Currants are laden with fruit, and of Strawberries there is abundance.

Asparagus.—This, though backward at first, has yielded a fair crop. In the case of all plantations under five years old, cutting should be discontinued, but "grass" may be gathered from older ones for some days yet, on account of their being late in coming into bearing. Encourage the growth of young plants by maintaining a loose and clean surface soil, and remove multitudinous spray, preserving only the strongest shoots. On the ridges a crop of French Beans, Lettuces, Beet, Nasturtiums, Coleworts, or other light crops may be grown.

Beet.—The first crop has been thinned out to 9 inches apart, and all deficiencies have been made up. The main crop should now be thinned out by means of small hoes, but the plants may be left without being singled out until the next thinning and cleaning. Transplant some on to Asparagus ridges, under moderately open fruit trees, and in any place where ground is to spare; let the rows be a foot or 15 inches apart, and the plants 8 or 9 inches asunder in the rows.

Cabbage, Cauliflower, &c.—Any Cabbages still open-hearted should have a piece of matting tied around them. Where they have been planted on Seakale ground, the sooner they are removed the better for the Seakale. Lettuces, Vegetable Marrows, Celery, and French Beans, all form good succession crops to Cabbages, or Potatoes dibbled into the alleys between them frequently do well if the Cabbages be removed before they draw and weaken the haulm. Plant out spring-sown ones as ground and convenience permit. Cauliflowers raised under handlights are now plentiful. Those first planted out are now coming in and look well, as does also the second crop, but the third has been sadly injured by frost. The early Cauliflowers, as well as the Lettuces planted amongst them, should be cleared off the ground as soon as possible, so as to make room for French Beans or Marrows, which should have been planted amongst them some time since, and another crop of Lettuces. Walcheren and Snow's Winter White Broccoli, as well as the Sprouting, should be planted out, the first two sorts in open positions, and the latter under trees. Plant out Brussels Sprouts between rows of early Potatoes, or between every two lines of Cabbages or French Beans. Plant out a few Savoys and Curled Kale, and keep the young plants of all the Cabbage tribe yet in the seed-beds clean and moderately thin, so as to have them strong and well rooted.

Celery.—Plant out the early crop in trenches from 5 to 5½ feet apart, and crop the intervening spaces with Cauliflower, Lettuces, or Endive. Where Radishes, Spinnach, or Cabbage plants have been grown in beds and are now removed, the surface of the beds may be scraped into the alleys, which may be dug over and a drill drawn along them, in which the Celery plants may be inserted. Ground, under succession crops that have been pricked out, must be stirred and kept clean and healthy; nursing Celery plants in frames is ruinous, as it causes them to "run."

Cucumbers.—These are bearing fruit freely, but the weather is still cold for them, necessitating their being covered up every evening with dry litter or straw. Water them abundantly overhead through a rose; a large water-potful to each light is the common allowance; the scum or dirt that gathers on the glass is generally shading enough, but in the event of the glass being very clean, strew thinly over it some straw after watering, if the sunshine is very powerful. Regulate the shoots, keep up a supply of young ones, pinch the laterals, and remove all decaying leaves. Use the tubular glasses for straightening crooked fruit, and gather all usable produce twice or three times a week. Dust some sulphur over the plants in case of mildew and red spider.

Carrots and Parsnips.—Frame Carrots, now fully exposed, have formed large and good roots, and those sown on warm borders and also on pieces of ground, on which winter Radishes have perished, are now in good usable condition, and are being bunched up for market. Thin out to 8 or 9 inches apart the main succession crops. Parsnips are now strong, and require all the space possible allotted to them. Lettuces between the rows, if ready, must, therefore, be removed for market.

Parsley.—Autumn-planted seedlings are now producing fine marketable produce, and the plants from seeds sown in February and March along with Radishes are now strong, and, the Radishes having been removed, they occupy the whole of the space. Keeping them clean and transplanting them if needful is all that is necessary.

French Beans.—The earliest crop of these, where planted in anything like exposed situations, have been completely killed; others have been greatly injured, and some crops in sheltered positions, and such as were protected with other vegetables, have escaped unhurt. In sowing French Beans, open the rows for them in the morning, and sow in the afternoon, by which means the ground about the seeds gets warmed, and the seeds are not nearly so apt to rot as they otherwise would be. Many failures, especially in the case of early crops, result from committing the seed to cold soils, in which a great proportion of them rot. Draw a little ridge of soil to the north side of the rows of young crops, remove as soon as possible the tall crops amongst which the Beans are sown, and interplant with Lettuces, Brussels Sprouts, Broccoli, &c.

Herbs.—Mint should be grown on damp ground, where it may be allowed to run wild, and patches of it may be separated and transplanted where new plantations are wanted. There is now a brisk demand for it. Transplant Marjoram and other things of that kind raised from seed, but Thyme, Tarragon, Sage, and similar plants only require to be kept clean and gathered for market according to demand.

Salsafy, Scorzonera, and Skirret.—Of these Salsafy is most in demand, therefore only as much of the others should be grown as will be needed. Plants of all of these are now beginning to grow strongly, therefore the Lettuces grown amongst them should be removed as soon as possible.

Leeks, Onions, &c.—Leeks raised in frames, and also those from early sowings, should be transplanted in rows from 10 inches to a foot apart, the rows being deeply drawn drills. Keep broadcast sowings of Onions well cleaned by means of short hoes. Sow on a cool piece of ground a few more seeds to furnish material for salads, and remove for market any of those still in the beds from autumn sowings, also all those showing flower from amongst the transplanted ones.

Lettuces.—These are the most accommodating of all crops, and the time likely to elapse between their being planted and their being fit for market can be closely calculated; they are used as intercroppers in almost all cases where they are not overshadowed by trees. The White Cos is the best for summer use, and some seeds of it, as well as some of the Hardy Hammersmith, may be sown on a cool and shady piece of ground. Plant out as the plants become ready for that purpose, and there is ground prepared to receive them, and tie them round with a piece of matting a week or a fortnight previous to their being removed for market.

Seakale.—Plants of this raised from cuttings of the roots planted in February and March between rows of Cabbages are now growing strongly, and consequently require all the room to themselves. Plantations that were earthed up in the spring are now levelled, and the Kale is growing vigorously, therefore, in order to have strong crowns and roots, remove all sprayey shoots, and leave only two or three of the strongest growths to each crown. Although plantations of Seakale are sometimes kept for five or six years undisturbed, they are not nearly so good as young ones.

Spinach.—Early spring sowings of Spinach are now exhausted, therefore, clear away the roots with a rake or fork, and prepare the ground for other crops. Make successional sowings of the round-leaved kind.

Potatoes.—Where these have been grown in open fields they have been greatly destroyed by late frosts, but against walls, under trees, and between rows of fruit bushes they have escaped unhurt. They should now be earthed up as speedily as possible, and Brussels Sprouts planted between them.

Rhubarb.—Encourage the growth of young plants; cut out all flower-stems from old ones, unless they are required for seed, and gather the tender leaves for market or for preserve manufactories.

Tomatoes.—In many cases the first crop of these has been so completely killed by frost as to render it necessary to replant the ground; in other instances in which the tops have been killed the plants have thrown out laterals, one only of which should be retained. All Tomato crops are now, however, looking well. They occupy the warmest positions, such as along the foot of walls, well sheltered and sunny borders, the base of spent Mushroom ridges, and, when in open quarters, the warmest and sunniest are selected for them. They should now be affixed to stakes, stripped of their laterals, and watered abundantly; after the water has settled, draw some loose earth over the wet mould, to prevent too sudden evaporation and a cracking of the soil.

Vegetable Marrows.—Though these are now pushing forth freely and strongly, handlights must still be kept on them at night. Such as are still to be planted may now be put in, without either bottom heat or top protection, on ground cleared of other crops or in the alleys between every two or three beds of Radishes, or in lines between every six or nine rows of early Potatoes.

Turnips and Radishes.—Sow Turnips broadcast on some cool piece of ground, and as they begin to germinate sow some lime and soot over them to keep off the Turnip fly. Thin more advanced crops

NOTES OF THE WEEK.

—— A great Rose show will be held at the Crystal Palace this day, and another exhibition of the Queen of flowers will take place at the Horticultural Gardens, South Kensington, next Wednesday.

—— We learn that the fine collection of fruit-trees, for which MM. Baltet, of Troyes, lately obtained the special prize offered by the Belgian Cercle d' Arboriculture, has also carried off a first prize at the Exhibition at Vienna.

—— Many thousand tons of Esparto Grass have just been consumed by fire on East Moor, near Cardiff, where the fibre had been imported and stacked for the purpose of paper making. The flames were visible for many miles round.

—— Mr. Barnes's articles on the Asparagus are this day published in a collective form at The Garden office, forming a concise and exhaustive account of the best modes of Asparagus culture employed both in this country and in France.

—— One of the best flowered specimens of Saccolabium guttatum that we have ever seen was exhibited this week at the Great Flower Show at Bath, by Mr Gurney Keel, Newton Park, Bristol. This magnificent specimen was furnished with no fewer than twenty-eight perfectly developed spikes of flowers.

—— A splendid specimen of Dipladenia amabilis was exhibited at Bath the other day by Messrs. W. Cole & Sons, of Withington, Cheshire. It was trained on a globe-shaped trellis, and bore 120 fine trusses of large and richly coloured flowers. It formed a centre of attraction, and was much admired, not only by amateurs, but also by professional plant-growers.

—— The thirtieth anniversary dinner in aid of the funds of the Gardeners' Royal Benevolent Institution will take place on Wednesday next, at the London Tavern, Bishopsgate Street, under the presidency of Lord Henry Gordon Lennox. Let us hope that there may be a full attendance on the occasion, and that the result may be highly beneficial to the institution.

—— Bank Hall, the former residence at Warrington of the Right Hon. Colonel Wilson Patten, M.P., was formally taken possession of this week by the Town Council of Warrington, who have purchased it and the adjoining grounds, with the assistance of generous gifts from Mr. Geo. Crosfield and Colonel Patten himself, as a Town Hall and recreation ground for the borough.

—— The Belgian Cercle d' Arboriculture intend to hold an Exhibition of fruit at Ghent next September. This will be confined entirely to native produce, as the object is to obtain the best possible specimens to represent Belgian Pomology at the ensuing Universal Exhibition at Vienna, to which it is proposed to send all the fruit that may carry off prizes at the preliminary Exhibition at Ghent.

—— Mr. J. Kaye, Mason View, Didsbury, Manchester, exhibited this week at Bath some exquisitely beautiful skeletonised leaves of Ferns, Ficuses, and other plants, and also various kinds of Grasses and flowers. They were tastefully arranged on bits of imaginary Lichen-covered rock-work, and were covered with a bell-glass. As a side-table or mantle-piece ornament these little cases of skeletonised leaves have few equals.

—— Messrs. Teutschel & Co., of Colchester, have just issued a useful hand-book, entitled "Notes on Lilies and their Culture; with extracts from M. Duchartre's 'Observations on Lilies,' also Mr. Baker's Synopsis, M. Max Leichtlin's Catalogue, and Letters from Mr. G. F. Wilson, Dr. Kellogg, and other well-known lovers of Lilies." The work consists mainly of extracts from our leading horticultural journals, and is a valuable book of reference both for the amateur and the general cultivator.

—— At the meeting of the Scientific Committee of the Royal Horticultural Society, on the 4th inst., Dr. Gilbert made some remarks on the proposed use of chalk mixed with coal in furnaces for horticultural purposes. He said it was quite certain the chalk could not supply any heat; on the contrary, its conversion into lime involved a considerable loss of heat in order to effect the change. What the chalk did was to absorb the heat and radiate it out again, and pieces of broken fire-brick would probably answer the purpose equally well. The mixture of these substances simply, so to speak, diluted the coal.

—— We learn that Mr. Wills has had the honour of supplying the whole of the dinner-table decorations at Buckingham Palace every day for his Imperial Highness the Shah of Persia; also at the Royal Italian Opera, and elsewhere. He likewise, we understand, furnished the whole of the floral decorations at the Royal Albert Hall on Monday last. On that occasion he used nearly 2,000 Calceolarias, 1,000 Lycopodiums (in 48-sized pots), 500 Isolepis gracilis, 500 plants of Moneywort or Creeping Jenny, two large van-loads of evergreens, 1,500 flowering plants, and 350 fine-foliaged plants and Ferns. The boxes were draped with wreaths all the way round, and altogether the hall had a gay and striking appearance.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

GREAT PROVINCAL SHOW AT BATH.

June 24th to 28th.

This may be pronounced to have been a successful meeting, though by no means so large as that held last year at Birmingham. Unfortunately for the exhibition, rain came on in the morning of the first day, and, though it was neither very heavy nor continuous, it was sufficient to be very unpleasant to visitors, of whom there was a considerable attendance. The show was held in the Victoria Park, in a most delightful situation. Under the large triple span-roofed tent, the chief of the plants were arranged; a long marquee was devoted to fruits, Roses, herbaceous plants, Pelargoniums, and cut flowers; another of the same kind was taken up entirely with table decorations and hardy Ferns; whilst a third was completely occupied by vegetables and the cottagers' classes. Outside were arranged plant and fruit houses of various forms and from many makers, as well as an extensive series of other horticultural requisites, whilst the usual accompaniment of bazaars, &c., was not wanting. The show itself was altogether a good one, but not quite equal to our expectations, and throughout the day some portions of the walks under the great tent were in such a puddle as to cause great inconvenience and annoyance. The stove and greenhouse plants from Mr. Baines and Messrs. Cole were certainly the chief feature of the exhibition, and unless they had been present the display of plants would have been under the average of large shows at Kensington and the Regent's Park. We might say nearly all the plants were simply marvellous productions, but Messrs. Cole's had the advantage in quality—or, we might say, scarcity and value—and, in consequence, where all were good, they took the first place. Our general report gives the names of the leading specimens, but no words can convey an idea of the rich luxuriance of the profusely-bloomed Erica Massoni in the leading collection, the glowing colour of Dipladenia amabilis, the grand specimen of Ixora Colei, and some Azaleas of high merit. Then the foliage plants were not only of a superior class, but as specimens they were almost matchless, while several of them have scarcely any superiors in the country. This remark applies especially to Cocos Weddelliana, and Phœnicophorium Seychellarum. Mr. Baines had his fine Sarracenias, some neat Heaths, and some fine Hedaromas and Ixoras. Two such collections rarely come into competition, and though the tug was tight, no injustice was done. Orchids were better than usual, a plant of Dendrobium Devonianum, shown by Mr. Baines, being simply superb. Cattleya Mossiæ was also superbly shown—a mass of splendid bloom, as were also several other kinds. We are glad to find specimen Orchids once more looking up. They are gaining ground as they deserve to do, and we wish them full success. The Ferns, though few, were excellent, especially some specimens of Adiantum Farleyense and the hardy kinds. Roses, too, came forth in great abundance and beauty, and the various collections of hardy herbaceous plants from Mr. J. T. Ware were something quite uncommon in point of good culture. The different sorts of fruit were excellent, and the several classes well represented; but most of the Melons were rather unripe, and some of the finest clusters of Grapes in the exhibition—Bowood Muscat—were disqualified for the same fault. The vegetables were wonderfully good, especially the collections, and more particularly that exhibited by Mr. Cox, in competing for the Carter Challenge Cup. In consequence of railway delays, Messrs. Jackson & Son, Kingston, were unable to exhibit their great specimens of stove and greenhouse plants, Heaths, and Orchids, and we were informed that other exhibitors were very much inconvenienced in this way, although, after a considerable amount of trouble, they eventually succeeded in bringing their plants in time.

Stove and Greenhouse Plants.—Of these some really excellent examples were shown, but in many of the classes there was little competition. To class 72 (twenty stove and greenhouse flowering and foliage plants) however, special interest seemed to be attached. This was one of the chief local prizes, and the principal competition for it lay between Messrs. W. Cole and Sons, of Withington, Cheshire, and Mr. Thos. Baines, gardener to H. Nichols, Esq., Southgate. Both collections were in fine condition, but to that from Messrs. Cole the first prize was awarded, Mr. Baines being an unusually good second. Conspicuous in Messrs. Cole's group were magnificent specimens of Cocos Weddelliana, Gleichenia flabellata, and Phœnicophorium Seychellarum, the last superlatively excellent. It also contained a noble plant of Dipladenia amabilis, a gorgeous mass of deep green foliage, and clusters of deep rosy salver-shaped flowers. Mr. Baines's group included handsome examples of Dipladenia, Ixora, Hedaroma, and fine plants of Gleichenias and Heaths. Mr. J. Nelson, St. Michael's Nurseries, Bristol, staged a creditable collection of plants in competition for this prize. In class 1 Messrs. Cole and Sons were again successful with a fine collection of half specimens, in 12-inch pots, all in admirable condition, fresh, and well flowered. Plants of this size are very suitable for purposes of decoration, and are quite as interesting in their way as those of larger dimensions. In class 3 Mr. J. E. Marsh, Norwood House, Binswood, took the first prize; in this collection we observed an excellent specimen of Kalosanthes coccinea, profusely covered with rosy-crimson flowers; also plants of Stephanotis floribunda, and Allamanda Schottii, the former beautifully grown and covered with clusters of deliciously sweet white flowers. Mr. T. King, gardener at Devizes Castle, was second; and in the third collection, belonging to Colonel Taylor, Fern Lodge, Bath, was a fine example of one of the prettiest Dipladenias in cultivation, viz., D. Boliviensis. In class 105 Mr. Baines exhibited a fine plant of the scarlet-spathed

Anthurium Scherzerianum, and in this competition he was closely followed by T. M. Shuttleworth, Esq., Leyland, near Preston, Lancashire. In the class of specimen stove plants, Mr. Baines exhibited a noble plant of Sarracenia flava, and another variety of Sarracenia equally well grown occupied a conspicuous place among his stove and greenhouse plants. Some well-grown Dracænas were exhibited by Messrs. Carter and Co., Mr. B. S. Williams, and Mr. Drummond. Of Bougainvillea glabra, several nicely-bloomed specimens were shown by different exhibitors. In a miscellaneons collection of plants, exhibited by Mr. Bull, of Chelsea, were several varieties of Macrozamia of great beauty, some of them combining the grace of the finest leaved Palms with the green colour and rich freshness of some of our best Ferns, besides having a character distinctly their own. Most of the species have globose stems, bearing a tuft of light, feathery, pinnate leaves, gracefully recurved at their apices. They appear to be as easy of culture as the commoner kinds of Palms, and will doubtless, when their character becomes more fully developed, occupy an important position amongst the higher classes of fine-foliaged stove plants. Mr. Baines staged five Sarracenias in class 74, and obtained the first award for three fine plants belonging to that genus. In class 23, Mr. J. E. Marsh, gardener to J. Bacchus, Esq., Norwood House, Leamington, exhibited half a dozen well-grown Caladiums, and obtained the premier award, there being no other competitors.

Orchids.—Bath and its neighbourhood do not seem to be rich in the way of Orchids, as but few collections of these beautiful epiphytes were staged, and the plants individually, with one or two notable exceptions, were scarcely above mediocrity. One plant of astonishing beauty and vigour stood out in bold relief from all the rest, and carried off the first award offered for specimen Orchids. This was a specimen of Saccolabium guttatum, shown by Mr. Gurney, Keel, Newton Park Gardens, near Bristol. It bore twenty-five fine spikes of flowers, and was altogether a prominent example of first-class cultivation. In the amateur's class, Mr. Baines exhibited a group containing some excellent plants of Cattleya Mossiæ and Lælia purpurata, and a grand specimen of the charming Dendrobium Devonianum. In this class Mr. Gurney also showed well-grown plants of Vanda Roxburghii cœrulea, Saccolabium guttatum, with twenty-eight spikes, a well bloomed Aërides odoratum, and a nice plant of the curious little Dendrochilum glumaceum, well furnished with pale green drooping spikes of flowers. In the nurseryman's class, Mr. B. S. Williams was first with nine well bloomed plants, among which we noticed the curious Cypripedium Crossii. Messrs. Maule & Sons, who were second, had a distinct form of C. Crossii, with a large proportion of white in its upper sepal. Mr. Bull exhibited a nice group of small Orchids, including Pescatorea cerina, the showy Oncidium Lanceanum, and the beautiful Odontoglossum Insleayi, var. leopardinum, a much more effective plant than the old and better known form.

Ferns.—These were not shown very largely, especially the arborescent kinds, and the large tent in consequence looked proportionately thin and bare. There were, however, some beautiful specimens of Adiantum Farleyense, which were, as they deserved to be, universally admired. Mr. Bannister, gardener to G. H. Ames, Cole House, Bristol, who carried off the first award in class 109, had a very fresh healthy specimen of this truly elegant Fern, of which four fine examples were staged in this class alone. In Class 25 for amateurs, Mr. J. Bricknell, gardener to Jas. Orred, Esq., Marshfield, Chippenham, staged twelve well grown specimens, and deservedly obtained the first award. This group included a fine healthy specimen of Adiantum Farleyense, one of the best in the show, A. cuneatum, and a fine specimen of the old Polypodium aureum, a plant remarkable for its bold recurved fronds, which are both distinct and effective from a decorative point of view. The second best collection shown by Mr. E. Howard, gardener to the Rev. J. G. C. Tussell, The Chauntry, near Frome, contained, among other nicely developed plants, a unique specimen of Llavea cordifolia, an interesting Mexican species very rarely seen in cultivation. In the following class Mr. J. Cypher, Queen's Road Nursery, Cheltenham, obtained first honours with nine fresh little specimens very tastefully arranged. Good plants of Adiantum Farleyense, and one of its near relatives A. Scutum, were included in this group, together with choice specimens of Gleichenia rupestris, G. dichotoma, and G. speluncæ. These last mentioned Ferns are very beautiful, when fresh and well grown, for stove or warm conservatory decoration, and the fronds themselves are unsurpassed for grouping with flowers in the choicest bouquets. Mr. E. J. Lowe, Highfield House, Nottingham, exhibited six very fine and distinct Adiantums in Class 96, including two fine varieties of A. Capillus-Veneris, a very effective species when well grown, and none the less interesting because indigenous to this country. In addition to these, fine plants of A. Lowei, A. Farleyense and A. Scutum were included in this group, one of the most interesting in the show. In the second prize group from Mr. J. Howard, we specially noticed A. braziliense, a variety in the way of A. Capillus-Veneris, A. Farleyense, and a fine specimen of A. pedatum, one of the most effective species in the group when well grown. First honours for a specimen Fern in Class 108 was taken by Mr. Baines, with a noble and well grown plant of Gleichenia speluncæ, and in Class 27 Mr. A. Morse, gardener to W. P. Baker Esq., Broomwell House, Bristol, staged half a dozen fresh plants; among which Adiantum cardiochlæna, and a unique plant of A. macrophyllum were specially deserving of notice. We are glad to see the taste for Adiantums increasing, as they are exceedingly well adapted for general decorative purposes. Among the Ferns we may notice two fine specimens of Cyathea dealbata, exhibited by Mr. W. Perry, gardener to J. W. Miles Esq., Shirehampton; near Bristol. Class 32, for Lycopods, was not well contested, and the first award went to Messrs. Bell & Thorpe, of the Paddock Nursery, Stratford-on-Avon.

Palms.—These graceful plants occupied a very prominent position in the show, and afforded pretty conclusive evidence that their special characteristics as decorative plants are now becoming thoroughly appreciated. Mr. J. W. Wimsett, of the Ashburnham Park Nursery, Chelsea, staged six well-grown plants in Class 10, and to these the first prize was judiciously awarded. In this group we may notice Astrocaryum Mexicanum, a distinct and effective spinose Palm, having glaucous undersurfaces to its flabellate or irregularly pinnate foliage. In addition to these, fresh plants of Hyophorbe Verschaffeltii, Areca lutescens, and the effective Stevensonia grandiflora were included in this group. Mr. Bull was second in the same class; and his well-grown specimens in Class 87 were good examples of these graceful plants. Here again, however, Mr. J. W. Wimsett carried off the highest award, with fine examples of Latania rubra, Euterpe montana, Thrinax elegans, Dæmonorops palembanicus, D. periacanthus, and Areca lutescens. Mr. B. S. Williams had also good plants in this class, including the elegant Cocos Weddelliana, Welfia regia, Martinezia Lindeniana, and other rare species. Among the miscellaneous Palms scattered through the large tent, we may specially note the noble specimen of Cocos Weddelliana, exhibited in Mr. W. Cole's prize collection, Class 72. We gave a figure of this plant some time ago, it being at the time the finest specimen in Europe. Pritchardia grandis was shown in excellent condition by Mr. W. Bull, and we consider it a grand acquisition to the flabellate section. Its broad convex leaves are a foot or more across, and of a deep fresh green colour. It is a noble plant, and looks well when contrasted with the more finely-cut foliage of the pinnate group. Kentia Canterburyana was exhibited by Messrs. W. Maule and Sons, Bristol, in good condition.

Succulent Plants.—Like the last group (the Palms), these curious plants are just beginning to receive attention at the hands of growers and the general public; and we know of few classes of decorative plants more worthy of extended cultivation than these. Many of the smaller Cacti thrive under greenhouse or even window culture, and we hope to see, ere long, Succulents more generally grown. One of the great points in their favour is that they grow readily, without the trouble and careful attention required by many other plants. We were pleased to see them occupy such a prominent position and excite so much interest as they did on this occasion. Mr. J. Croucher, gardener to J. T. Peacock, Esq., Sudbury House, Hammersmith, was first in all the classes, and the collections he staged were well worthy of the honourable awards they received. The Agaves staged in Class 33 were fine examples of the smaller growing kinds, and did the exhibitor great credit. In this class Mr. B. S. Williams was a good second with A. geminiflora, A. Verschaffeltii, A. filifera densa, and three other good kinds. Mr. W. C. Drummond, who showed well in the other classes, had a remarkably fine A. filifera in his group. One charm which adds extra value to these as decorative plants is their Protean variability, scarcely two plants raised from seed coming exactly alike—indeed, in this respect, they may truthfully be said to rival the Orchids themselves. In Class 137, Mr. W. Carpenter, Victoria Nursery, Western, staged a nice group of Cacti; and Mr. C. H. Dutton, 25, Wilson Street, Bath, had a still more effective group, two of the most showy species being in flower. Echinopsis multiplex rosea bore three of its large flowers, which are of a delicate lilac colour, shading to white in the tube. Echinocereus multicostatus bore two of its fiery crimson flowers, two or three inches in diameter, and remarkable in having very blunt apices to their segments. Mr. C. Drummond also exhibited in this class. A very rare and striking collection was exhibited by Mr. Croucher, including the noble three-legged example of Echinocactus Pottsii, figured in our pages some time ago. Several of the more delicate or rarer kinds were grafted on some species of columnar Cereus, and seemed to enjoy their elevated position, being in the greatest health and vigour. In Class 136, both Mr. Croucher and Mr. C. Drummond came out very strong, the awards being made in the order named, and Messrs. Bell & Thorpe, of Stratford-on-Avon, came in third with a very interesting collection of the smaller and hardier kinds.

Pelargoniums.—A few nice examples of these plants were staged, the best in the nurserymen's classes being sent by Mr. C. Turner, of the Royal Nurseries, Slough, whose specimens were well grown and profusely covered with their showy flowers. In the amateurs' classes, Mr. A. Morse, gardener to W. P. Baker, Esq., took the lead with very nice specimens, the other exhibitors being Messrs. Bricknell, Marsh, and Evans. In Class 15, Mr. A. Morse was first with half a dozen very nicely grown fancy kinds, among which we may notice the following as most effective:—Bridesmaid, blush lilac and white; Jane Grey, maroon and white; Duchess of Buccleugh, deep rosy lilac; and Countess of Waldegrave, very deep rose. Mr. J. Evans also exhibited very creditably in this group, and Mr. Jas. Lye, gardener to W. Hay, Esq., Cliffe Hall, Devizes, came in third. The zonal, flowering, and foliage kinds were fine, and the double flowering varieties shown by Messrs. Bell & Thorpe, Mr. J. E. Marsh, and Mr. T. Pestridge, were excellent in their way, the awards being made in the order named. In the first prize group were well flowered specimens of Signet, bright scarlet; Madame Lemoine, bright rose; and Madame Boulard, a profuse flowering, rosy-flowered variety, well worth cultivating. Mr. T. Pestridge also showed in this class, but his plants, though otherwise well grown, were rather drawn.

Fuchsias.—These were large and particularly well flowered; in the amateurs' class of half a dozen plants, Mr. Wilcox, Bath, was first with nice pyramidal specimens of Pauline, Rhoderick Dhu, British Sailor, Annie, Marginata, and Duchess of Lancaster. Amongst the other competing groups in this class, Try-me-oh, Arabella, Excellent, Starlight, Rose of Castile, Schiller, and Red Rover were the best; in the class of four plants, two double-flowered ones, viz., Marksman and Vainqueur de Puebla, were very conspicuous and striking. Marginata, from Mr. Wilcox, was first as the best specimen Fuchsia; it was a large and fine plant, laden with bloom. In the nurserymen's class of six Fuchsias, Mr. H. Mould, Bath, was first with a very excellent group of plants, averaging about 6 feet high, by 4 feet in diameter at the base. The varieties were Schiller, Lustre, Tristram Shandy, Arabella, Venus de Medici, Rose of Castile. In the second group, Wave of Life was one of the finest and prettiest Fuchsias in the exhibition; it was a young plant of a loose and graceful character, bearing a profusion of large red flowers, and an abundance of healthy, though yellow-tinged foliage.

Liliums.—In the different classes for these charming bulbs, Mr. W. Bull and Mr. Thos Ware staged nice collections. The former exhibitor had L. umbellatum grandiflorum (bearing large orange-coloured flowers), L. umbellatum fulgidum, and one or two other varieties. A. white-flowered variety of L. Martagon was also included in this group. Messrs. Ware and Sons had L. eximium (a pure white variety, sweet-scented, and resembling L. longiflorum), L. aurantiacum, L. fulgens, and the tall buff-flowered L. excelsum. We know of few objects more noble or interesting than a fine bed of hardy Lilies, and we are glad to have seen them so well represented on this occasion.

Pansies.—Of these Mr. Hooper, of Widcombe Hill, Bath, received first prizes for both English and fancy sorts, and Mr. Meddick, of the same city, was second. The best Pansies at the show, however, both English and fancy sorts, were those shown by Messrs. Downie, Laird, and Laing, of Forest Hill, whose blooms were large, of fine substance, brightly coloured, and symmetrical in form. Mr. Ware and Messrs. Kelway and Sons likewise provided very beautiful collections of these favourite florists' flowers.

Hardy and Variegated-leaved Bedding Plants.—In the class of twenty-five plants of each of these, Messrs. Bell and Thorpe were the most successful competitors. Their collection included Yuccas, Polemonium cæruleum, Bambusa Fortunei, Sedum Sieboldii, Sempervivums, Grasses, Ivies, and also Pelargoniums, Fuchsias, and similar plants.

Roses.—Of these there was a grand display on Tuesday; the principal Rose show, however, did not take place until Thursday. The blooms exhibited on Tuesday, by amateurs as well as by nurserymen, were large, brightly coloured, and otherwise in excellent condition. Mr. Cranston, Messrs. Paul and Son, Mr. Turner, Mr. Davidson, Mr. Scott, and Mr. Camm were the principal exhibitors. Amongst hybrid perpetuals, the beautiful deep crimson sort called Reynolds Hole was particularly striking, and other brilliantly-coloured kinds were Duke of Edinburgh, Xavier Olibo, Louis Van Houtte, Lord Macaulay, Prince Camille de Rohan, General Jacqueminot, and Alfred Colombe. Among paler coloured hybrid perpetuals may be mentioned La France, Mdlle. Eugene Verdier, Baroness Rothschild, and Centifolia rosea; and, of a still darker hue, John Hopper, Victor Verdier, Madame Knorr, Clothilde Rolland, Edward Morren, and others. One of the finest hybrid perpetual Roses, however, was Annie Laxton, exhibited by Messrs. Paul and Sons, which is a fine, cup-shaped, very double sort, of a rosy-carmine colour. The same firm also showed a dozen blooms of the exquisite rosy-lilac, tea-scented kind, called Cheshunt Hybrid, which was one of the best Roses in the exhibition. Amongst other tea-scented sorts, Climbing Devoniensis, Marie Van Houtte, Souvenir d'un Ami, Gloire de Dijon, Comte de Paris, and Madame Sertot were particularly good. Among Bourbons, the best was Souvenir de la Malmaison. Noisette Roses were very beautiful, especially Maréchal Niel, Niphetos, and Triomphe de Rennes.

Cut Flowers.—Cut blooms of stove and greenhouse plants were marvellously fine, especially those exhibited by Messrs. Cole and Son, of Manchester, to whom the first prize was awarded. Amongst them were trusses of Dipladenia amabilis, several sorts of Allamandas, Ixoras, Heaths, and Orchids, Statice Holfordi, Bougainvillea glabra, Dracophyllum gracile, Stephanotis floribunda, Pimelea diosmæfolia, &c. Miss Baines, Southgate, also showed a stand of a dozen bunches of very choice blooms of a character somewhat similar to the preceding; as did also Mr. D. Lumsden, of Bloxham Hall. Of cut blooms of hardy herbaceous plants Mr. Ware exhibited the finest collection; but those from Mr. Perkins, of Leamington, Mr. Jennings, of Shipston-on-Stour, Mr. Laking, of Chipping Norton, and Mr. Bryan, of Bristol were also good. For a dozen bunches of three trusses of blooms of zonal Pelargoniums, Mr. Gabriel, Vale Lodge, Bath, was first with large umbels of brightly coloured and well-formed flowers of Lorenzo, Grand Duke, Warrior, Monster, Rising Sun, Mrs. Wm. Paul, Emiline Grisau, Gladiateur, Pioneer, Blue Bell, and Mrs. Upton. So fine were the cut blooms in this class that all the competing stands received prizes. In the class of half a dozen sorts of cut blooms of the double-flowered Pelargoniums, Messrs. J. Carter and Co. were first with very fine blooms of C. Gligim, Madame Bondet, Wilhelm Pfitzer, and Victor Lemoine as scarlets; and Madame Boutard and Marie Lemoine as pink-coloured sorts.

Hardy Herbaceous and Alpine Plants and Flowers.—Of these there were few exhibitors. For a dozen specimens of hardy herbaceous plants in pots, Mr. T. S. Ware, of Tottenham, was first with well-flowered plants of Spiræa Aruncus and japonica, Orchis foliosa (very fine), Lilium umbellatum, Funkia ovata marginata, remarkable alike for its flowers and variegated leaves, two sorts of double-flowered Pyrethrums, two sorts of Delphiniums, two kinds of Campanulas, and Geranium ibericum. For cut flowers of the same kind of plants, Mr. Ware was also first with bunches of Irises, Spiræas, Lilies, Pæonies, Alliums, &c., and to the same exhibitor was likewise awarded a prize for nine Lilies in pots, the kinds being eximium, excelsum, auratum, Martagon, Thunbergianum, a dwarf variety of aurantiacum, and three varieties belonging to the umbellatum section. Mr. Bull, of Chelsea, had another very fine group of Lilies. In the class of a collection of Alpine plants, equal first prizes were awarded to Mr. Ware and Messrs. Garraway & Co., of Bristol. Those from the first-named exhibitor consisted chiefly of plants in flower, and those from the latter principally of ornamental-leaved plants, such as Sedums, Saxifrages, Campanulas, &c. For a group of twenty hardy Alpine or herbaceous variegated-leaved plants, Mr. Ware was first with specimens that would have maintained their position against many a good score of fine-leaved stove plants. They consisted of variegated forms of Symphytum officinale, Iris Pseudacorus, Spiræa Ulmaria, Vitis hederacea, Sedum japonicum, S. Sieboldii, S. atropurpureum, Hemerocallis Kwanso, Alopecurus pratensis, Solanum Dulcamara, and various sorts of variegated and ornamental-leaved Funkias. For six double-flowered Pyrethrums, Mr. Ware was first, and Mr. C. Turner, Slough, received a similar award for a half dozen plants of Antirrhinums. Mr. Turner likewise exhibited a wonderfully good collection of cut flowers of Pæonies, also some good Tree Carnations and Picotees, and Messrs. Garraway showed a fine and extensive collection of cut blooms of Irises and Pæonies.

New Plants.—Of these some account will be furnished next week.

Hardy Shrubs and Conifers.—At the end of the large tent, next the main entrance, Mr. Maurice Young, of Godalming, had a rustic bank in the form of a rootery, on which he planted a collection of Conifers, Japanese Maples, and deciduous and evergreen shrubs. Mr. Fowler, of Castle Kennedy, also showed a basketful of his prettily-variegated Abies Douglasii Stairii.

Miscellaneous Plants.—Nurserymen's collections of these were more limited than usual. From Mr. R. J. Veitch, of Exeter, came the largest group, to which a first prize was awarded. It contained a specimen of the beautiful Tacsonia exoniensis, trained on a trellis, and laden with bright magenta coloured flowers. The same nurseryman also showed several fine plants of the newer sorts of Dracæna, a large and fine-flowered specimen of Blandfordia flammula, a fine specimen of Pandanus Veitchii, and several Ferns, Crotons, and other stove and greenhouse plants. Mr. B. S. Williams, Upper Holloway, was second with an excellent group of the newer kinds of stove and greenhouse plants. Amongst them were several fine specimens of Anæctochilus in flourishing condition, various kinds of pitcher plants, the beautifully variegated Habrothamnus Hawkshawianus; Echeveria scaphylla, pulverulenta, and farinosa; a nice plant of the semi-scandent Paullinia thalictrifolia; Agave Williamsii—a beautiful narrow-leaved sort; and some others. In this group were also a large and well flowered specimen of Cypripedium caudatum and a huge example of Anthurium Scherzerianum, together with some beautiful Filmy Ferns, Palms, Dracænas, Crotons, &c., and several plants of the pretty yellow-flowered Cyclobothra pulchella. Mr. W. C. Drummond, Bath, showed a miscellaneous group of plants containing Alocasia Jenningsii, and a few nice stove and greenhouse fine-foliaged plants and Ferns. Messrs. Jackman & Son, Woking, furnished half a dozen profusely-flowered little specimens of Clematis, consisting of lanuginosa nivea, Mrs. J. Bateman, Jackmanni, Alexandra, rubella, and magnifica. As the best specimen Clematis, Messrs. Jackman showed a medium-sized plant of Thomas Moore, which, although a considerably smaller plant than the second prize one, was nevertheless the newest and best flowered.

Dinner Table Decorations.—These were pretty numerous, and of rather more than average merit. The prizes were liberal, £20, £15, £10, and £7, and two ladies took the first and second prizes, Mrs. E. Harris, of Clarendon Park, Salisbury, being first, and Miss Edith Blair, of 30, Upper Bedford-place, London, second. The contest, as usual, lay between elaborateness and simplicity; and, as usual, simplicity gained the day. We suppose, after a time, the lesson will be learned by competitors at exhibitions, and private decorators, that overloading is vulgar, and that in regard to such matters, enough is better than a feast. The prize table was dressed with a light hand. Three tall March glasses, with slender stems, were dressed with a few drooping Fuchsias and Maiden-hair. There was little colour, and no excess of green. Four simple glasses were also placed on the table, with a single small Iris and Fern leaf in each. The top portion of the centre glasses was furnished with tall Grasses, sprays of Schizanthus and Rodanthe Manglesii, which contrasted admirably with the Fuchsias in the branches of the glasses. The napkins were slightly raised, and a tiny bouquet-like "button-hole" was placed on each. The fruit was rather common-place, a small Melon and Pine at top and bottom, and six dishes of other fruits. Assuredly, neither the quality of the dessert nor of the flowers had anything to do with the gaining of the prize—but taste, pure and simple, only. But it is possible to carry simplicity into poverty or barrenness. This is what Miss Blair almost seemed to do on this occasion. Two tiny Palms were let through the table at the ends, and one March glass, nicely dressed, formed the centre. A dozen or more tiny glasses were placed around. The napkins were nicely folded, and the dessert was good. The other exhibits were much more elaborate, and some of the desserts were choice and remarkably good. Possibly, in putting so much on their tables, they were partly led astray by the wording of the schedule, from which it appeared that the prize was offered for the best means of utilising fruit and flowers in the adornment of the dinner table. It would also seem as if they had read utilising in the sense of using, and thought the more that were used the greater the likelihood of their gaining the prize. Some of the tables (which were all set for fourteen) were also covered with fruit, flowers, and glass so thickly as to hide all the cloth. Others were dressed with much taste, but all beyond the first two were over-dressed. The third prize was taken by Mr. Armstrong, of Cheltenham, who had three March glasses, eight tiny baskets of flowers, and a very fine dessert of Pines, Melons, Grapes, Peaches, Nectarines, and Figs. The fourth prize was gained by Mr. Cypher, of Queen's Road, Cheltenham, who had three March glasses, glass troughs, &c., and a capital dessert. Each of these exhibitors dressed their centre glasses well with Grasses, Ferns, and flowers, and they rather erred in having too many good things displayed, than in crowding them into too limited a space. The single glasses for dinner or dining-room tables called forth a spirited competition, and some of them were very pretty. The first prize was taken by Mr. Spencer, gardener to Lady Mackworth, Camden Place, Clifton; the second by Mr. Evans, gardener to Dr. Abercrombie, Cheltenham; and the third by Mr. Cole, gardener to Thos. Baines, Esq., Stoke Bishop, Bristol. The bouquets were plentiful, but not of the usual merit. The following were the prize-takers:—First, Mr. G. Perkins, Leamington; second, Mr. Turner, West Derby, Liverpool; third, Do., do.; fourth, Mr. Evans, gardener to Dr. Abercrombie, Cheltenham. There were over twenty competitors in all. For a button-hole bouquet, Miss Baines was first, with a Dendrobium Devonianum in the centre, surrounded by a few flowers of the delicate Calanthe vestita, with a single Gleichenia frond standing up at the back, and three tiny bits of Maiden-hair Fern drooping slightly all round—a charming Bouquet.

Plants Suitable for Dinner Table Decoration.—In the class of half a dozen of these were exhibited some extremely pretty little plants of graceful habit and ornamental appearance. Mr. W. Bannister, Cole House, Westburgh-on-Trym, was first with Dracæna ferrea, Cooperi, lineata and congesta, Lomaria gibba, and Adiantum trapeziforme. Prominent amongst the other exhibits in this class were Cocos Weddelliana, Aralia reticulata, A. leptophylla, Pandanus decorus, Ananassa sativa variegata, Croton longifolium, C. interruptum, and several graceful little Arecas.

Fruit.—This was, on the whole, excellent, and the various classes were well represented. Pine Apples were large, solid, and heavy; and, in the class of three fruits, all the winning sorts were Queens. The three from Mr. G. Ward, Bishops Stortford, to whom the first prize was awarded, weighed collectively 15 lbs. 6 oz. Mr. Miles, Wycombe Abbey, was second; and Mr. Selwood, Eaton Hall, third. In the class of one Pine, of any sort, Mr. Ward was again first, with a beautifully-grown Queen; Mr. Miles was second, with the same sort; and Mr. H. Battram, Cyfarthfa Castle, Merthyr Tydvil, third, with a huge Providence. Amongst fruits, Grapes were the most remarkable in point of excellence, the bunches being large, well shouldered, and thickly set, and the berries plump, well coloured and ripened, and covered with a beautiful bloom. The finest dish of black Grapes consisted of three very large and perfect clusters of Black Hamburgh, from Mr. Coleman, Eastnor Castle, Ledbury; the other winning black sorts were likewise of the same variety. For a dish of white Grapes, Mr. Smith, St. Helens, Lancashire, was first, with three superb clusters of Muscat of Alexandria; and to the same kind second and third prizes were awarded. Amongst other white varieties shown were the Canon Hall Muscat, White Frontignan, Chavoush, Common and Buckland Sweetwater, excellent clusters of Forster's White Seedling, and extraordinarily large and fine clusters of Bowood Muscat. The latter were unfortunately unripe, and were, therefore, disqualified. Nevertheless, in this case, and also in that of a basket of Grapes, perhaps, it had larger and better clusters than any other kind, but in neither instance were the berries ripe. In the class of a basketful of Grapes, weighing 12 lbs, the Muscat of Alexandria stood first, and the Black Hamburgh second; indeed, the one as a white and the other as a black Grape had no equal in point of size of bunch and fine finish, coupled with ripeness. For three varieties of Grapes, Mr. Douglas, Loxford Hall, was awarded a first prize, for fine examples of Muscat of Alexandria, Buckland Sweetwater, and Black Hamburgh. Some examples of Vines in pots were exhibited, but their fruit was badly coloured. There was only one class for Peaches, and the prizes in that were keenly contested, all the fruits shown being remarkably large and well coloured. To half a dozen Royal Georges, from Mr. J. Burnett, Dorking, the first prize was awarded. This sort, together with Noblesse and Bellegarde, were the only varieties shown. Nectarines were furnished in abundance, there being no fewer than thirteen competing half-dozens, some of which were uncommonly fine. Mr. Jack, Battle Abbey, Surrey, was first, with a fine dish of Elruge; Mr. Coleman, and Mr. A. Grant, Whittington Hall, Chelford, being the other successful competitors. Of Figs, only four dishes were exhibited, the kind being Brown Turkey, which was large and well ripened. The supply of Cherries was limited; but Mr. J. Miles and Mr. Beck showed fine fruits of Black Circassian and Elton. Strawberry classes were well filled, and the produce in most cases good. For six distinct kinds, Mr. J. Holder, Kestbury, Cheltenham, was first, with Alice Maud, Kitley's Goliah, Keen's Seedling, British Queen, President, and Trollope's Victoria. Amongst the other sorts shown were Sir C. Napier, Duc de Malakoff, Souvenir de Kief, Dr. Hogg, Eclipse, Premier, and Excellent. For a single dish of Strawberries, Mr. J. Brickell was first with very fine examples of Sir. C. Napier; Mr. Coleman was second with British Queen; and Mr. Douglas third with La Constante. Mr. Lee, of Clevedon, exhibited two dishes of a nice-looking small seedling Strawberry. Of Melons there was a great variety, but most of them were unripe. The best green-fleshed sort was a medium-sized fruit of Victory of Bath, quite ripe, and of most delicious flavour; but amongst all the other fifteen green-fleshed, and fourteen scarlet-fleshed, fruits, not one was at its best. Amongst scarlets, Scarlet Gem was first, Reak's Hybrid—a kind very like Scarlet Gem—was second, and Moreton Hall third. Many good Cucumbers were exhibited, both in the class allotted to them and also in miscellaneous collections of vegetables. In the class of two braces, each of different sorts, Mr. Holder was first with fine, young, beautifully bloomed specimens of a deep green colour, called Holder's Dreadnought and Little Gem. Blue Gown, Harrison's White Spine, Telegraph, and Hobb's Prolific were the best of the other sorts. Of Tomatoes, some extremely fine fruits, large and well ripened, were exhibited. Mr. Cox, Madresfield Court, was first with the ordinary large red-fruited sort; Orangefield Prolific and Hathaway Excelsior being the other two kinds exhibited. In the class of miscellaneous fruits not mentioned in the schedule, Mr. A. Morse, Broomwell House, Bristol, was first with a dish of Scotch Bonnet Capsicums, a kind rightly named, for they precisely resemble in shape an old-fashioned broad Prince Charlie or Strathspey bonnet. In the same class another first prize was awarded to Mr. Brickell for a dish of King Pippin Apples in a state of good preservation, but somewhat deficient in flavour; Newton Pippins and a bunch of Bananas were also shown under this head. For a collection of fruit, Mr. D. Wilson, Castle Hill, South Molton, Devon, was first with an admirable collection, consisting of six fine bunches of Black Hamburgh Grapes, a smooth-leaved Cayenne, and a Queen Pine, a Golden Perfection Melon, Stirling Castle and Royal George Peaches, Violet Hative Nectarines, two dishes of Marguerite Strawberries, and light and dark-red Cherries.

Vegetables.—In the class of collections of vegetables grown by gardeners in Somerset, Gloucestershire, and Wiltshire, very excellent examples of that kind of produce were exhibited. Mr. Carkell, Swindon Road, Cheltenham, was first with William the First and Laxton's Supreme Peas, Vegetable Marrows, Cauliflower, early Stone Turnips, Holder's Cucumber, Horn Carrots, Bath Cos Lettuce, White Tripoli Onions, and Alma, Skinner's early, early Shaw, and Ashleaf Potatoes. The open class, consisting of a collection of fifteen dishes of vegetables, including four of Potatoes, was not only remarkable for the fine produce exhibited in it, but also for the quantity of each sort shown; for instance, Cauliflowers, Cabbages, Turnips, and Potatoes were represented by a dozen of one sort, Asparagus by a hundred heads, &c. Mr. Holder was first, with Globe Artichokes, a large dish of Mushrooms, early Cauliflowers, Dreadnought Cucumbers, French Beans, Harrison's Glory Pea, White Dutch Turnips, massive white "drumsticks" of Asparagus, Nonpareil Cabbage, Short-horn Carrots, Manchester Red Celery, Tripoli Onions, Tomatoes, and a dish of Alma Kidney Potatoes. Peas as a rule were pretty good, but the preference was deservedly given to the sorts with well filled pods, such as William the First, Laxton's Supreme, Alpha, and others of that class; therefore, the large but comparatively empty-podded kinds, though pleasing to the eye, had to give place to these. Messrs. Hurst and Son offered prizes for three varieties of Laxton's Peas, for which a first prize was awarded to Mr. Gilbert, Burghley, who showed fine pods of William the First, Popular, and Superlative. Asparagus was large, and very much bleached. A hundred heads of it constituted a dish, and there were two classes, one for the common sort, and the other for Conover's Colossal, of which some of the shoots were fully an inch and a quarter in diameter. Kidney Potatoes, considering the season, were unusually large in size. Mr. G. Burridge was first with Mona's Pride, Mr. Willis second with Myatt's Ashleaf, and Mr. Rooker third with Haigh's Kidney. Rivers's Royal Ashleaf, Haigh's Kidney and Golden Multiplier were exhibited as second early Kidneys; and, as second early round sorts, Giant King and Carter's First Crop ranked the highest. Some very fine, large, and heavy Mushrooms were exhibited, also several dishes of Onions, which consisted invariably of the white Tripoli, the produce of autumn sowings; these were in many instances 5 in. in diameter, and beautifully white and sound. Prizes were offered for a dozen sorts of Lettuces, three heads of each, but as the two collections exhibited contained nothing particular in the way of culture or variety, the first prize was withheld, and second and third prizes only were awarded. For a collection of sweet and pot herbs, Mr. Wm. Cross, Peuk Lodge, Sidmouth, Devon, was first with a very fine collection tastefully arranged and neatly labelled. Among the different kinds were Tarragon, Fennel, common, broad-leaved, and variegated Thymes; Black, Spear, and Pepper Mint, Parsley, Winter and Summer Savory, Chives, Long Lea, Common and Wood Sage; Clary, Pot, Sweet, and Knotted Marjoram, Burnet, Bush, and Sweet Basil, Chervil, Balm, Italian and Indian Cornsalad, Lavender, Anise, Rosemary, large and small-flowered Borage, Dill, Angelica, Nasturtium officinale, Green Purslane, Penny Royal, Rampion, Wormwood, Costmary, Horehound, blue, white, and red-flowered Hyssop, Pot Marigolds, Sorrel, Rue, Chamomile, and Southernwood. For Messrs. Carter's challenge cup and prizes there was a keen competition. The cup was awarded to Mr. W. Cox, who showed an excellent collection, in which were Early Snowball Turnip, White Naples Onions, Royal Ashleaf Potatoes, Victoria Rhubarb, Early Long-pod Beans, Laxton's Alpha, G. F. Wilson, Laxton's Supreme, Carter's Hundredfold, Carter's First Crop, Carter's White Gem, and James' Prolific Peas; Early Horn Carrots, Carter's Dwarf Mammoth Cauliflower, Govent Garden Garnishing Parsley, Globe Artichokes, Atkins's Matchless Cabbages, Lettuces, Telegraph and Marquis of Lorne Cucumbers, and Little Heath, and Cox's Golden Gem Melons. Mr. Lumsden, Bloxham Hall, was second, with a somewhat similar collection.

Cottagers' Classes.—These embraced such plants, flowers, fruits, and vegetables, as are generally grown by cottagers. The best window plant was an Ivy-leaved Pelargonium, and the second best a very fine specimen of Musk. In the class devoted to the largest collection of cut blooms taken from any one garden, wonderful collections, consisting of the blooms of the common herbaceous plants, with occasionally spikes of Fuchsias, Pelargoniums, and Calceolarias, were shown. Blooms of Roses, consisting of such kinds as Gloire de Dijon, climbing Devoniensis, Marquise de Castellane, Souvenir de la Malmaison, &c., were also contributed, and there were also classes for fruits, in which we noticed Strawberries, Gooseberries, and Cherries. The vegetable classes were well represented. Potatoes, both of Round and Kidney sorts, being large and good. Cabbages, too, were as fine as any in the exhibition, and the other commoner subjects, such as Peas, Onions, and Lettuces, were likewise good.

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